

VOLUME VIII. No. 3

WHOLE NUMBER, 31

# PROGRESSIVE MEDICINE

A QUARTERLY DIGEST  
OF  
ADVANCES, DISCOVERIES AND IMPROVEMENTS  
IN THE MEDICAL AND SURGICAL SCIENCES

EDITED BY

HOBART AMORY HARE, M.D.

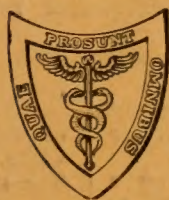
Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia

ASSISTED BY

H. R. M. LANDIS, M.D.

Assistant Physician to the Out-Patient Medical Department of the Jefferson Medical  
College Hospital

SEPTEMBER 1, 1906



LEA BROTHERS & COMPANY  
PHILADELPHIA AND NEW YORK

---

SIX DOLLARS PER ANNUM



*New Edition, Enlarged and Thoroughly Revised.*

# GRAY'S ANATOMY

## Anatomy, Descriptive and Surgical

By HENRY GRAY, F.R.S.

LATE LECTURER ON ANATOMY AT ST. GEORGE'S HOSPITAL, LONDON

New American edition, enlarged and thoroughly revised, by J. Chalmers Da Costa, M.D., Professor of Surgery and Clinical Surgery in the Jefferson Medical College, Philadelphia, and a corps of special assistants. In one imperial octavo volume of 1600 pages, with 1132 large and elaborate engravings. Price, with illustrations in colors: cloth, \$6.00, *net*; leather, \$7.00, *net*. With illustrations in black: cloth, \$5.50, *net*; leather, \$6.50, *net*.

GRAY'S ANATOMY is and has been for fifty years the leading work in all medical literature. It has guided the teaching of Anatomy in English-speaking lands so exclusively that the name "GRAY" has become popularly synonymous with its subject. Far from stationary, Anatomy is perpetually advancing, and any work designed to reflect its full development needs frequent revision. GRAY alone enjoys a sale of sufficient magnitude to warrant the expense of a proper revision, as its merits attract practically the entire demand. Accordingly, in its many editions it has enlisted the ablest anatomists on both sides of the Atlantic, but no revision has been so thorough as this by Dr. DaCosta. An anatomist, a surgeon and a teacher, he combines all qualifications necessary to place the book abreast of the latest advances, keeping always in view the requirements of students and practitioners as well. Every page has been revised, and whole sections rewritten, notably those on the Brain, Spinal Cord, Nervous System, Abdomen and Lymphatics.

Of the magnificent series of 1132 illustrations, no less than 500 are new in this edition. They are so large that every detail is clear, and they bear the names of the parts engraved directly upon them, whereby the position, extent and relations are seen at a glance and impressed on the mind in a way otherwise impossible. Colors are used more freely than ever before to indicate the muscle-attachments, veins, arteries, nerves and lymphatics. The work is therefore an unrivalled dissector. The old and the new nomenclature are both given, the new enclosed in brackets, thus serving all readers better than either system alone. The text has been most carefully organized, so that its main and sub-headings, and its catchwords in heavy type, will give the student a systematic grasp of all the subjects in their proper anatomical dependence.

In a word, GRAY'S ANATOMY will remain in the future as it has been in the past, the easiest book from which to teach, to learn, or to prepare for examinations for degree or license to practice. It is also an unrivalled reference book for the physician and surgeon.

The new edition of Gray's Anatomy bears out more than ever its justification of leadership among works on anatomy.—*Clinical Review*.

It is a work of supererogation to review a book which has won such a place for itself as Gray's Anatomy. This edition provides about five hundred new illustrations, a remarkable showing in view of the fact that the entire volume contains eleven hundred and thirty-two. An innovation is the use of the new or international nomenclature in parentheses following the currently used terms. This plan is a good one, for it not only avoids a high degree of confusion, but also tends to introduce in a rational fashion the newer terms.—*Boston Medical and Surgical Journal*.

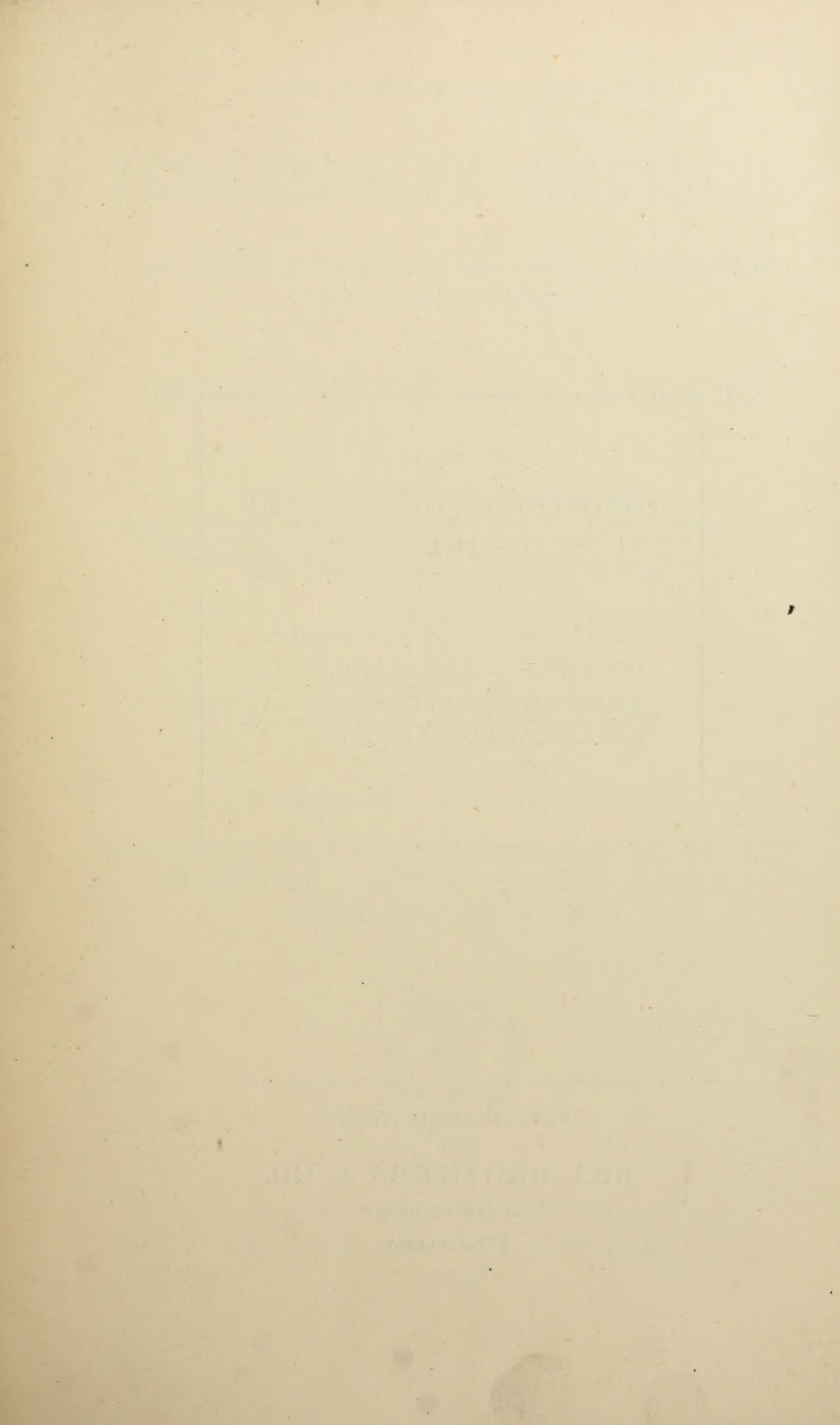
All the features that made the former editions of this standard work valuable are retained, while a number of new ones have been added. The revision by DaCosta has been thorough and able, and the sections on the Lymphatic System, Abdomen, Brain, Spinal Cord, and Nervous System have evidently been entirely rewritten and much enlarged, although the general plan of the work remains unchanged. The book is a fine specimen of typographical work, retaining the familiar features which make it so convenient for reference and study, and which established it as the standard Anatomy.—*Journal of the American Medical Association*.

PHILADELPHIA,  
706-8-10 Sansom Street.

**Lea Brothers & Co.**

NEW YORK,  
111 Fifth Avenue.





CONTRIBUTORS TO VOLUME III.

1906.

---

EWART, WILLIAM, M.D., F.R.C.P.

GOTTHEIL, WILLIAM S., M.D.

NORRIS, RICHARD C., M.D.

SPILLER, WILLIAM G., M.D.

---

PUBLISHED QUARTERLY

BY

LEA BROTHERS & CO.

708 SANSON STREET

PHILADELPHIA



*Awarded Grand Prize, Paris Exposition, 1900.*

---

# PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,  
AND IMPROVEMENTS

IN THE

## MEDICAL AND SURGICAL SCIENCES.

EDITED BY

HOBART AMORY HARE, M.D.,

PROFESSOR OF THERAPEUTICS AND MATERIA MEDICA IN THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA; PHYSICIAN TO THE JEFFERSON MEDICAL COLLEGE HOSPITAL; ONE TIME CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE UNIVERSITY OF PENNSYLVANIA;  
MEMBER OF THE ASSOCIATION OF AMERICAN PHYSICIANS, ETC.

ASSISTED BY

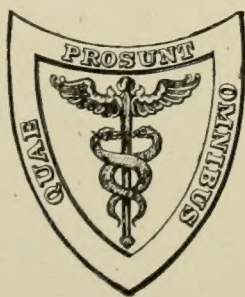
H. R. M. LANDIS, M.D.,

VISITING PHYSICIAN TO THE TUBERCULOSIS DEPARTMENT OF THE PHILADELPHIA HOSPITAL,  
TO THE WHITE HAVEN SANATORIUM AND TO THE PHIPPS INSTITUTE; DEMONSTRATOR  
OF CLINICAL MEDICINE IN THE JEFFERSON MEDICAL COLLEGE.

---

VOLUME III. SEPTEMBER, 1906.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS,  
AND BLOODVESSELS—DERMATOLOGY AND SYPHILIS—OBSTETRICS—  
DISEASES OF THE NERVOUS SYSTEM



LEA BROTHERS & CO.

PHILADELPHIA AND NEW YORK

1906



Entered according to the Act of Congress, in the year 1906, by

LEA BROTHERS & CO.,

in the Office of the Librarian of Congress. All rights reserved.

DORNAN, PRINTER



## LIST OF CONTRIBUTORS.

---

WILLIAM T. BELFIELD, M.D.,

Associate Professor of Surgery in the Rush Medical College; Professor of Genito-urinary and Venereal Diseases in the Chicago Polyclinic, Chicago.

JOSEPH C. BLOODGOOD, M.D.,

Associate in Surgery, Johns Hopkins University, Baltimore, Md.

JOHN ROSE BRADFORD, M.D., F.R.C.P., F.R.S.,

Professor of Medicine and Physician to the University College Hospital, London.

JOHN G. CLARK, M.D.,

Professor of Gynecology in the University of Pennsylvania, Philadelphia.

WILLIAM B. COLEY, M.D.,

Attending Surgeon to the General Memorial Hospital; Associate Surgeon to the Hospital for Ruptured and Crippled; Clinical Lecturer in Surgery and Instructor in Surgery at the College of Physicians and Surgeons, Columbia University, New York.

FLOYD M. CRANDALL, M.D.,

Adjunct Professor of Pediatrics, New York Polyclinic Hospital; Visiting Physician to the Minturn Hospital for Scarlet Fever and Diphtheria; Consulting Physician to the Infants' and Children's Hospitals, New York.

WILLIAM EWART, M.D., F.R.C.P.,

Physician to and Joint Lecturer on Medicine at St. George's Hospital, and Physician to the Belgrave Hospital for Children, London.

EDWARD MILTON FOOTE, M.D.,

Instructor in Surgery, Columbia University; Visiting Surgeon, New York City Hospital.

CHARLES H. FRAZIER, M.D.,

Professor of Clinical Surgery in the University of Pennsylvania; Surgeon to the University, Howard, and Philadelphia Hospitals.

WILLIAM S. GOTTHEIL, M.D.,

Professor of Dermatology and Syphilology, New York School of Clinical Medicine; Consulting Dermatologist to the Sheltering Guardian Orphan Asylum; Dermatologist to the Lebanon and Beth Israel Hospital, and to the German West Side Dispensary, New York.



EDWARD JACKSON, M.D.,

Professor of Ophthalmology in the University of Colorado; Ophthalmologist to the City and County Hospital of Denver.

D. BRADEN KYLE, M.D.,

Professor of Laryngology in the Jefferson Medical College, Philadelphia.

H. R. M. LANDIS, M.D.,

Visiting Physician to the Tuberculosis Department of the Philadelphia Hospital, to the White Haven Sanatorium and to the Phipps Institute; Demonstrator of Clinical Medicine in the Jefferson Medical College.

RICHARD C. NORRIS, M.D.,

Assistant Professor of Obstetrics in the Medical Department of the University of Pennsylvania, Philadelphia; Physician-in-Charge of Preston Retreat.

ROBERT B. PREBLE, A.B., M.D.,

Professor of Medicine in Northwestern University Medical School; Attending Physician to Cook County, St. Luke's, Wesley, German, and Polyclinic Hospitals, etc., Chicago.

B. ALEXANDER RANDALL, M.D.,

Professor of Otology in the University of Pennsylvania, Philadelphia.

WILLIAM G. SPILLER, M.D.,

Professor of Neuropathology and Associate Professor of Neurology in the University of Pennsylvania; Clinical Professor of Nervous Diseases in the Woman's Medical College of Pennsylvania and in the Philadelphia Polyclinic.

J. DUTTON STEELE, M.D.,

Associate in Medicine, University of Pennsylvania, Philadelphia.

ALFRED STENGEL, M.D.,

Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia.



## CONTENTS OF VOLUME III.

---

	PAGE
DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS . . . . .	17
BY WILLIAM EWART, M.D., F.R.C.P.	
DERMATOLOGY AND SYPHILIS . . . . .	99
BY WILLIAM S. GOTTHEIL, M.D.	
OBSTETRICS . . . . .	149
BY RICHARD C. NORRIS, M.D.	
DISEASES OF THE NERVOUS SYSTEM . . . . .	251
BY WILLIAM G. SPILLER, M.D.	
INDEX . . . . .	291





# PROGRESSIVE MEDICINE.

SEPTEMBER, 1906.

---

## DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

·BY WILLIAM EWART, M.D., F.R.C.P.

### **PULMONARY TUBERCULOSIS.**

THE yearly literature of this subject is now so vast that full justice could not possibly be done to it, even in abstract, in a few pages. But, like any other campaign, that against tuberculosis presents innumerable incidents besides actual fighting, which do not require a critical review and may be left to the historian. The important strategical moves, and the genuine successes do not take so much recording; and it is with them only that we must deal. The past year will be remembered in the annals of tuberculosis as that of the great International Congress in Paris, which can be regarded as reflecting the general situation. This may be summed up as one of steady and uniform progress along many lines, but especially in hygiene and prevention. Valuable practical work has been done, and further good must arise from the ideas freely exchanged. Dramatic interest was provided in the department which most lends itself to sensation, that of bacillotherapy; and if nothing more substantial had accrued we have at least derived from von Behring the assurance that he has solid grounds for hope. In the absence of any startling novelty some of the vexed questions of etiology and of pathology have received considerable elucidation. On the whole it may be said of the Congress that it has achieved excellent work all round, except in the department of discovery.

**The Relation between Anthracosis and Tuberculosis.** An historical review of the evolution of our present views on tuberculosis has been contributed by von Behring.<sup>1</sup> Villemin (1868), whose work he notices,

<sup>1</sup> Tuberculosis, September, 1905.



believed in a hæmatogenous origin of phthisis, due to the penetration of the infection into the blood through the lungs. But further evidence is needed of a lung penetration by any form of infection. His own view is that the rule is a primary infection of the lymphatics. Cohnheim's results in the study of anthracosis harmonize with the possibility of a conveyance of particles from the pharyngeal and cervical lymphatics to the bronchial glands, and thence into the lungs, and this has indeed been demonstrated by means of Indian ink.

The following results were noticed by Wainwright and Nichols:<sup>1</sup> Two sets of guinea-pigs were injected with bacillary emulsion into the trachea: one set all died quickly of pulmonary tuberculosis; the other set kept their lungs almost free, but developed an extensive tuberculosis of the abdominal organs. These experiments had been undertaken to test the evidence published many years ago in England by the Registrar-General, as well as on the Continent and more recently in the United States, to the effect that workers in coal mines suffer from tuberculosis in a much less proportion than the average of working men. They had, therefore, prepared the second set of guinea-pigs for the bacillary injection by keeping them for two months in an atmosphere saturated with coal-dust.

As there could be no question of any germicidal action, since experiments have shown that staphylococci and the bacilli of typhoid as well as of tubercle grow luxuriantly in the presence of coal-dust, Nichols suggested that the protective influence might perhaps be connected with the action of the soluble lime salts abundantly present in coal, a suggestion well worthy of investigation, but hitherto lacking any proof.

Another point worth noting is the germ-clearing effect exercised upon the air, but this too does not explain the results in hand. Provisionally then the authors believe that some structural changes in the lungs are to be given the credit, namely, a swelling of the coal-laden epithelial cells, and an increase in the interstitial tissue such as to impair the elasticity of the lung without, however, setting up any induration.

Meanwhile in France important facts have come to light in connection with the study of pulmonary anthracosis. The paradoxical conclusion is gaining ground that the deposits of coal-dust in the pulmonary and bronchial glands were *originally swallowed, not inhaled*. It may be mentioned at this place that Professor Hamilton had shown long ago that, owing to the impermeability of the bronchial subepithelial membrane, coal particles would have to travel a long way, indeed, down to the level of the infundibulum, before they could gain admission into the lymphatic circulation.

According to Calmette and Guérin and to van Steenberghe and

<sup>1</sup> *American Journal of the Medical Sciences*, September, 1905.

Grysez<sup>1</sup> "physiological anthracosis" would be mainly due to an intestinal absorption of coal-dust, except perhaps after any prolonged stay in a dense atmosphere of smoke. They derive this conclusion from experiments on rabbits showing that ligature of the œsophagus will prevent anthracosis; but that, when swallowing is not interfered with, but one of the main bronchi is plugged with cotton-wool, the corresponding lung becomes anthracosed nevertheless to the same extent as the other lung. Age has, however, a great influence. The mesenteric glands in young guinea-pigs act as efficient filters for Indian ink, and after feeding experiments with the latter they are found crowded with particles. But in adults their filtering is less perfect, and the particles pass on to the lungs, which thus undergo a rapid anthracosis. These facts and inferences possess considerable significance in connection with Calmette's opinion that pulmonary tuberculosis is capable of being acquired *via* the intestine.

RAND MINERS' PHTHISIS. T. Oliver<sup>2</sup> calls attention to the chief differences which exist between the clinical type of this form of *silicosis* with its bronzing and shortness of breath and its fibrotic pulmonary lesions, and the type of tuberculous phthisis. As the disease is not associated with the introduction of soluble toxins into the circulation, as in the case of phthisis, there is no initial prostration at the period of invasion. As a fact, the sufferers are not aware that their health is undermined until it is ruined, and their fitness for work is permanently lost. There seems to be no remedy for the affection in its advanced stages. The chief prophylactic indication is to limit the number of hours spent in the deleterious atmosphere, and the treatment must have for its object to keep up the general and the cardiac strength.

**The Role of the Lymphatic System, in Particular of the Glands and Thoracic Duct.** Work of considerable pathological promise has been done in this direction. The lymphatics have always been regarded as the filtering department of the circulation, and thanks to Metchnikoff we have formed some idea of the way in which it is kept perpetually efficient, although perpetually in use. In tuberculosis this filtering function is a protection, but the resulting "bacillary concentrations" are in danger. These concentrations are at the very portals of the circulation, and if any escape of bacilli from their glandular quarters should occur a wholesale invasion is inevitable. That this complication may occur is now proved; and that it probably occurs in the majority of cases of generalized tuberculosis is most likely in the light of W. T. Longcope's<sup>3</sup> pathological observations. Nineteen of his thirty cases of more or less

<sup>1</sup> Annales de l'Institut Pasteur, 1905, No. 12, p. 787-793.

<sup>2</sup> British Medical Journal, October 14, 1906.

<sup>3</sup> American Medicine, January, 1906.



generalized infection were of the "acute miliary" type, and in fourteen of these the thoracic duct was tuberculized with or without caseation, and in another case bacilli were found in the contained lymph. In a series of eight less acute cases the duct was involved in two cases, and in three chronic cases it was not implicated. It appears then that nearly 80 per cent. of generalized miliary infections are evolved through the thoracic duct, and the same causation is probably answerable for about 63 per cent. of the subacute infections.

**The Lymphocyte is the Chief Opponent of the Bacilli** according to Bartel's<sup>1</sup> investigations, which are still in progress, and by prolonged contact *in vitro* it can destroy their virulence. Bacilli thus deprived of their toxic and chemotactic, as well as of their reproductive, properties might, he thinks, be turned to account as a vaccine.

**Dyspnœa from the Pressure of Enlarged Glands.** Yule<sup>2</sup> relates the case of a boy, aged four years, whose paroxysmal severe dyspnœa could not be traced to any sufficient cause. At last tracheotomy was resorted to, but in vain, and death occurred three and a half weeks from the beginning. An enlarged infratracheal gland had ulcerated into the bifurcation of the trachea from below causing complete obstruction. Cases of this kind are not very rare and, therefore, important to bear in mind in connection with the danger to life and the difficulty of saving it.

Sternberg<sup>3</sup> deals with the same subject from an anatomical standpoint. 6132 autopsies performed during a period of seven years revealed the presence in thirty-five cases of softened bronchial glands, ulcerating into neighboring organs, chiefly the œsophagus or the right bronchus. In advanced age this is stated to be the most common cause of pulmonary gangrene.

**The Early Signs and Diagnosis of Pulmonary Tuberculosis.** Among the thoracic peculiarities associated with the habitus phthisicus B. Stilter<sup>4</sup> notes an unusual mobility of the tenth rib, which he finds is apt to be only loosely attached to the costal arch; and this may perhaps mean a tendency to viscero-ptosis and to dyspepsia. He is a believer in a structural as well as a functional predisposition to phthisis, in "a universal congenital asthenia," calling for an early cultivation of the nutrition and strength.

In the list of the physical stigmata or characteristics of the predisposed J. Sörgo and E. Suess<sup>5</sup> believe that we should include *a unilateral small-*

<sup>1</sup> Wiener klin. Wochenschrift, 1905, xviii., No. 41

<sup>2</sup> British Medical Journal, August 19, 1905.

<sup>3</sup> Wiener klin. Wochenschrift, 1905, No. 46.

<sup>4</sup> Berliner klin. Wochenschrift, 1905, No. 38.

<sup>5</sup> Wiener klin. Wochenschrift, 1905, No. 48.

ness of the mammary gland and of the areola, which they have observed on the side chiefly affected by pulmonary tuberculosis.

*The study of the blood and of anæmia* is an important branch of phthisiology. Among early changes Professor M. Labbe<sup>1</sup> finds: (1) Muddy complexion or ochrodermia without anæmia; (2) ochrodermia with slight anæmia; and (3) anæmia and ochrodermia combined: this is the chlorotic form; and analogous groups can be made out in later phases of chronic disease. Arsenic and iron are indicated only in those cases which present anæmia.

*A study of the stomach and of the effect of gastric juice on the tubercle bacillus* has led E. Palier<sup>2</sup> to the conclusion that in about 60 per cent. of incipient cases there is hyperchlorhydria, in 20 per cent. almost normal conditions, and in about 20 per cent. hypochlorhydria. The indications should vary accordingly. The bacteriolytic power of gastric juice is greater *in situ* than it is *in vitro* and probably protects the intestine except in hypochlorhydria. On the other hand the prevalence of hyperchlorhydria may explain the greater liability of consumptives to gastric ulcer.

L. A. Levison's<sup>3</sup> investigation into the subject of digestion bears upon a series of one hundred and fifty cases. In 74.6 per cent. some stomach trouble was recorded. But whilst in 21.3 the trouble preceded the pulmonary affections it followed the latter in as many as eighty-five of the one hundred and twelve cases with gastric complications.

*The relative value of "physical" and of "x-ray" examination for early diagnosis* is still keenly discussed. This broad fact is undeniable and Pryor<sup>4</sup> has recently emphasized it, namely, that pulmonary tuberculosis is rarely recognized at an early and proper time for successful treatment. Equally undeniable is the fact that the method of Laennec has had a long trial and that it has been found wanting. It is doubtless correct to admit with H. B. Whitney<sup>5</sup> that rales localized at the apex are of paramount value as a sign of tuberculosis; but unhappily their presence identifies the stage as no longer a strictly incipient one. This acknowledged failure adds much strength to the claims of any alternative method, such as the x-ray method, which professes to be more efficient. J. E. Talley and W. S. Newcomet in Philadelphia, H. Walsham, Stanley Green, C. W. Cunningham, G. Harrison Orton, and others in England have entered a strong plea in favor of the latter. It is obvious that their contention cannot be disregarded on the score of

<sup>1</sup> Revue de Médecine, 1906, No. 3.

<sup>2</sup> Medical Record, November 11, 1905.

<sup>3</sup> Ohio State Medical Journal, November 15, 1905; Journal of the American Medical Association, January 27, 1906.

<sup>4</sup> Medical Record, November 25, 1905.

<sup>5</sup> Boston Medical and Surgical Journal, May 18, 1905.



insufficient skill or experience. The fluoroscope is useless in the hands of the mere tyro, but this is not a reason for condemning the method as worthless. On the contrary we are driven to the conclusion that, in view of the difficulty of our task, we cannot afford to forego the assistance of the *x*-ray expert, and that the future and its endless possibilities are on his side; although we must thoroughly sympathize with the trust placed in expert percussion and auscultation by such masters of the art as C. Theodore Williams and M. Landolfi.<sup>1</sup>

*The examination of the apex of the lung* for early signs is described by Maurice Letulle<sup>2</sup> in a series of articles well worth consulting, and George Mannheimer,<sup>3</sup> dealing with the same subject, gives an interesting account of *Krönig's method* (which he dates back to 1889) for percussing out the shape and extent of the pulmonary apices. When reliable results are attainable this is of course an important aid to diagnosis.

*Williams' sign* still lacks an explanation: O. de la Camp and L. Mohr<sup>4</sup> profess to give it. This sign consists in a diminished inspiratory excursion of the wing of the diaphragm of the same side as the apex of the lung affected. This is, however, never completely paralysed. Experiments on animals have suggested to them that the cause lies in an entanglement of the phrenic nerve, as it crosses the dome of the pleura, in the inflammatory thickening and scarring of the apex. They regard the symptom as due to a compression of the phrenic, but they admit that it might sometimes be due to an infective neuritis. It can undoubtedly be due to a variety of other influences.

*The influence of posture on adventitious breath sounds, with especial relation to the early diagnosis of phthisis*, has been especially noticed by W. B. Ransom.<sup>5</sup> Not only in cases of bronchitis and emphysema, but in a few cases of limited pulmonary tuberculosis, adventitious sounds may be audible in the supine while absent in the erect position. Ransom's observations do not yet enable him to offer a satisfactory explanation for this variation. That it does occur is well worth remembering in special cases where every refinement of diagnosis may be of importance.

*Palpation of the bronchial glands* is an ingenious method of diagnosis devised by E. Neisser, of Stettin.<sup>6</sup> It suggested itself to him by the observation that many of his patients or those predisposed complained persistently of a dull aching upper dorsal pain or spinalgia. This was often aggravated after tuberculin injections and pointed to some local cause. He was able to identify the latter with the bronchial glands by

<sup>1</sup> Semaine Médicale, March 14, 1906.

<sup>2</sup> Presse Médicale, December, 1905.

<sup>3</sup> New York Medical Journal, May 5, 1906.

<sup>4</sup> Zeitsch. f. exper. Path. and Therap., vol. i.

<sup>5</sup> British Medical Journal, October 21, 1905.

<sup>6</sup> Deutsch. Arch. f. klin. Medizin, 1906, vol. lxxxvi. p. 28.

using an œsophageal sound provided with a small inflatable india-rubber bag. As soon as this had reached a level 22 to 28 cm. below that of the incisors the bag was inflated and the sound gently drawn up. When the glands happened to be swollen the sensation conveyed to the operator, whose touch must of course be that of an expert, was that of an uneven surface and of a resistance; that concurrently conveyed to the patient was one of pain. Patients are thus, according to Neisser, capable of being tested as to any bronchial gland tenderness, and he regards this tenderness as strong circumstantial evidence of a tuberculous tracheo-bronchial adenopathy.

*The insidious catarrh* which so commonly heralds in pulmonary tuberculosis is a warning too often misunderstood by the patient and even by the physician. Willson's<sup>1</sup> investigation of the first subjective symptoms in eighty-six cases shows that in the majority of them the first symptom noted was a persistent cough, without a recognized cause, which was regarded as due to an ordinary cold, and not infrequently disappeared for a time, leaving only a frequent necessity of clearing the throat. All cases of this kind should be at once submitted to a searching examination, and the sputum analyzed for bacilli.

Valuable clinical data are furnished by H. P. Loomis's<sup>2</sup> study of 500 cases. Antecedent pleurisy was recorded in 16 per cent. with an average interval of three and a half years. After the age of thirty, tuberculosis is, he thinks, always a recrudescence. Among the factors of *prognosis* the chief are: vitality, personal and family history, age, character, intelligence and disposition, and digestive functions. Less important are fever, hemorrhages, expectoration, and bacilli, and whether one or both lungs are affected. A long-lived ancestry tells more in favor of a patient than tuberculous parentage can tell against him.

*Premenstrual pyrexia*, not known even in healthy subjects, is regarded by Hugo Kraus<sup>3</sup> from clinical observations as of diagnostic significance when occurring regularly, and as suggesting the probability of tuberculosis. As the auscultatory signs show some simultaneous exacerbations in women in which the phthisis is not latent, he thinks it probable that the lungs are liable to a premenstrual hyperæmic movement analogous to that affecting the nasal mucosa.

*The tachycardia of early tuberculosis* may possibly be under some thyroïdal influence. C. A. Costa's<sup>4</sup> thesis endeavors to elaborate that view on the strength of Poncet's teaching that inflammatory changes are apt to be set up in various organs by the tuberculous infection,

<sup>1</sup> International Clinics, 15th series, vol. ii. p. 50.

<sup>2</sup> Medical Record, July 29, 1905.

<sup>3</sup> Wiener med. Wochenschrift, March 25, 1905, p. 600.

<sup>4</sup> Thèse de Lyon, 1905



side by side with its own specific products. In the thyroid these changes may take the shape of fibrous atrophy; or on the contrary hypertrophy and increased function (including the tachycardia in question) may be its mode of response to the toxic invitation. Thyroid hypertrophy of this sort would possess a "defensive" character analogous to that of the tonsils and lymphatic glands.

G. W. Norris<sup>1</sup> inquires deeply into the causes of tachycardia in pulmonary tuberculosis. He cites the following factors: stimulation of the sympathetic or depression of the pneumogastric nerves, or increase in the irritability of the cardiac ganglia or muscle fibres from toxæmia, or glandular disease, or serous and mediastinal implications perhaps involving perineuritis, or again thyroïdal influences. It is remarkable that no instance of tachycardia occurred among eighty-seven cases of phthisis complicated by valvular lesions reported from the Phipps Institute. In 120 cases of phthisis in which tachycardia was present (out of 1261 cases treated at the Institute in one year) 21 per cent. in the early stage died, 28 per cent. became worse, 7 per cent. were unimproved, 21 per cent. gained with slowing of the pulse, and 21 per cent. gained in spite of tachycardia. These figures show that cases thus complicated run a more severe course than ordinary cases. The treatment, of course, must depend upon the cause.

*Immunity from tuberculosis in mitral stenosis* has long been ascribed to the agency of the pulmonary congestion kept up mechanically by the valvular lesion. Hitherto this explanation was based upon mere inference and lacked the support of any collateral evidence. D. Rothschild<sup>2</sup> has recently pointed out that the many sided healing virtues of Bier's passive hyperæmia lend to the theory in question a high degree of probability. He has even attempted to show that the development of a mitral lesion may exercise a beneficial influence upon the course of a pre-existing tuberculosis. Future possibilities may be contained in this suggestion which cannot yet be foreseen.

*The association of pulmonary carcinoma with tubercle* has been occasionally reported, but seldom diagnosed during life. This was achieved by F. Jessen,<sup>3</sup> of Davos, whose paper acquires additional value from the bibliography attached to it.

*The excessive metabolism of phthisis* is demonstrated by Robin's apparatus for the estimation of O and CO<sub>2</sub> in expired air. After measuring the lung capacity, a bagful of the expired air is transferred to a graduated burette and the percentages of gas are read off after successive absorption by caustic soda and pyrogallol. The coefficient of oxida-

<sup>1</sup> Tub. und Heil., July, 1905.

<sup>2</sup> Berliner klin. Wochenschrift, March 27, 1906, xlii., No. 13

<sup>3</sup> Zentralblatt f. innere Medizin, 1906, No. 1.

tion thus obtainable, varies in each affection. As low as 65 to 75 per cent. in gouty conditions and in chronic alcoholism, which are typical instances of Bouchard's diseases with "slackened nutrition;" it is highest in consumption, viz., 85 to 95 per cent., and a mean between these extremes in rheumatism, diabetes, etc. Gautrelet had previously constructed urinary charts illustrating the same views in Bouchard's original terms of "hyperacidity" and "hypoacidity." A. W. Gilchrist,<sup>1</sup> who for some years has devoted considerable study to the question of the various morbid types of metabolism, has substituted for Gautrelet's classification of the urinary charts or "graphs" a fresh one of his own containing three classes. In the first class there is a small excretion of uric acid, suggestive of the much disputed significance of uric acid in the metabolism of gout; in the second, a large excess of both the total acidity and the uric acid; and in the third, a marked diminution of acidity with an equally striking increase of urea or of phosphates. Both methods of analysis, the respiratory and the urinary, agree in showing that there is excessive metabolism, local or general, in both pulmonary tuberculosis and psychopathic conditions. Acne vulgaris shows a very constant diminution of absorbed oxygen.

*The effect of altitude upon the activity of visceral metabolism*, as shown by the respiration exchanges, is according to G. Kuss<sup>2</sup> not appreciable at an elevation of 4350 metres, even after a prolonged stay. His observations were made on Mont Blanc in 1903 and 1904. He arrived at the conclusion that (1) any slight excess in the amount of oxygen consumed was to be explained by the increased work of pulmonary ventilation; (2) the respiratory quotient is not altered in any characteristic degree; (3) mild mountain sickness occasions no perceptible change in the metabolism; (4) the respiratory activity is but slightly increased, and the absolute quantity of air inspired is much less than in the plain.

**The Prevention of Tuberculosis.** THE MORTALITY FROM PHTHISIS<sup>3</sup> in towns with more than 15,000 inhabitants, recorded within recent years, is found to be much lower in Germany (20 per 10,000 population) than either in England (27.47) or in France (30). The difference is so great that it almost suggests that some fundamental error has been overlooked. These figures are quoted as there are no better exponents of the existing need of prevention and of cure.

THE ADMINISTRATIVE CONTROL OF PULMONARY PHTHISIS. A circular recently issued by the local government board for Scotland<sup>4</sup> recom-

<sup>1</sup> British Medical Journal, October 28, 1905.

<sup>2</sup> Compt. rend. de l'Académie des Sciences, tome cxli., No. 4.

<sup>3</sup> Lancet, March 3, 1906.

<sup>4</sup> British Medical Journal, March 17, 1906.



mends on the lines suggested by R. W. Philip the establishment of dispensaries and hospitals for early cases (sanatoriums), reception houses for advanced and dying cases, and colonies and homes for convalescent patients. The authorization of these proposals by the board is an encouraging example of spirited public action. But the best practical lesson in the administration of prophylaxis is that which has been given to the world by President Roosevelt in the detailed orders which he has issued to all the heads of executive departments of the government at Washington for the prevention of the spread of tuberculosis.

AN AGGRESSIVE POLICY, entirely opposed to the usual professional attitude of expectant reserve, which is reputed the only prudent attitude for universal adoption, is shown by John B. Hawes<sup>1</sup> to be necessary if the ordinary out-patient is to be induced, however reluctantly, to submit to strict diagnosis and treatment at the really curable stage.

THE INFECTIVENESS OF SPUTUM in its various conditions has been much studied in the past and again by Cadéac.<sup>2</sup> He finds it possible, only with difficulty, to infect the peritoneum of guinea-pigs with dried sputum dust, and he argues that the respiratory passages of man would be still more resistant. On the other hand, A. Fränkel, at the recent Congress of Internal Medicine (1906), referring to the three routes of invasion, hæmatogenous, lymphatic (alimentary), and respiratory, concludes that the bronchial route is that most commonly followed by infection in man. *The danger from flies* as possible agents of transmission has been again brought up for discussion by J. O. Cobb.<sup>3</sup> It is well, however, to be reminded that the diminution in actual infection supposed to have resulted from precautions with regard to sputum cannot yet rank as a scientific fact based upon strict proof.

The dog, although not much of a scavenger, may perhaps be regarded as a greater domestic danger than the house-fly. Landouzy<sup>4</sup> calls attention to the increase in canine tuberculosis reported by one of the veterinary schools, and to the danger to children from licking. The dog's infection he thinks is dust from the floor, just as tubercle-dust from the handkerchief, that fatal commodity brought in under Henry III of France, is the direct source of the appalling mortality among laundry hands.

THE TECHNIQUE OF SPUTUM EXAMINATION is steadily being improved.<sup>5</sup> Practical value attaches to C. A. Blume's suggestion that patients who do not expectorate should be made to cough against a glass slide. An

<sup>1</sup> Boston Medical and Surgical Journal, April 5, 1906.

<sup>2</sup> Lyon Médical, December 10, 1905.

<sup>3</sup> New York and Philadelphia Medical Journal, 1905; Ibid., October 7, 1905.

<sup>4</sup> Presse Médicale, 1905, Nos. 79 and 80.

<sup>5</sup> Harold Meakin and P. J. Cammidge, Lancet, September 23, 1905. Glynn Whittle, Lancet, September 16, 1905.

important paper is also contributed by C. G. Higginson<sup>1</sup> on the methods of staining.

THE INTESTINAL DERIVATION OF PULMONARY TUBERCULOSIS demonstrated by A. Calmette and C. Guérin<sup>2</sup> may be analogous to the absorption of glanders by the intestine of the horse. Behring attributes tuberculosis in the adult to a tardy evolution of infantile intestinal infections. Calmette, however, finds adult goats more liable than kids to infection through the intestinal route. He believes that the bacilli in dust are only dangerous when swallowed and that re-infections may result on a large scale from the swallowing of sputa.

"CRACHER OU LA MORT" is a singular variation upon the hitherto authorized cry "no spitting," yet this is the inevitable conclusion flowing from Calmette's observations in relation to the intestinal origin of tuberculosis in man, which have had the further support of H. Vallée's<sup>3</sup> experimental work at Alfort. To expectorate the poison is, according to Calmette, the first of all our principles of individual prophylaxis—quite as much as it is our duty, in public prophylaxis, to abstain from promiscuous spitting. The two precepts are happily not incompatible; their antagonism is apparent only. But above all let the mouth be kept clean, and on no account let us swallow the saliva which collects whilst we are inhaling impure or dusty atmospheres.

**Treatment of Tuberculosis.** THE TREATMENT OF COUGH AND OF EXPECTORATION has lost the prominent position which it held in the pre-Koch era. In well-managed cases cough almost ceases to be a troublesome symptom. But in ordinary climates the complications of bronchitis, of catarrh, and of suppurative caseation will never be absolutely suppressed. Excellent suggestions as to their treatment are offered by Price.<sup>4</sup>

MESENTERIC GLAND CURETTING AS A PREVENTIVE TREATMENT possesses the greatest interest for the chest physician. The operation first performed by Edred Corner<sup>5</sup> has had encouraging results and further cases will probably be added to the list of the four which he has published. In one of the latter the operation was undertaken too late to obviate the occurrence of fatal tuberculous meningitis.

AN IMPROVED TENT COTTAGE designed by W. T. Brown, of Watrous, New Mexico, has met with unqualified praise from E. Fletcher Ingals and J. M. Dodson<sup>6</sup> in connection with its adaptability to the necessities of a hot climate, including due protection from flies.

<sup>1</sup> *Lancet*, August 26, 1905.

<sup>2</sup> *Annales de l'Institut Pasteur*, xix., No. 10.

<sup>3</sup> *Ibid.*, 1905, No. 10.

<sup>4</sup> *Edinburgh Medical Journal*, May, 1905; *Therapeutic Gazette*, 1905, p. 633.

<sup>5</sup> *Lancet*, December 23, 1905.

<sup>6</sup> *Ibid.*, January 20, 1906.



SIMPLICITY OF LIFE, we are told by Sir James Grant,<sup>1</sup> is the means of preventing that lowering of the vitality which supplies a favorable soil for the bacillus. He is in favor of tents rather than a sanatorium. He also holds strongly that all schools should be examined by medical experts. J. W. Pettit<sup>2</sup> also has much to say in favor of tent accommodation instead of buildings.

THE ROUGH LIFE IN THE OPEN, devoid of rest and nursing, from which G. R. Pogue<sup>3</sup> has seen disastrous results, is totally distinct from the "simple life" referred to by Grant.

REST AND EXERCISE IN THE TREATMENT OF CONSUMPTION. The therapeutic value of rest cannot be impugned. But the Nordrach system has inaugurated a rather more liberal policy, and King and Neagle<sup>4</sup> include among sanatorium resources carefully planned and supervised physical exercise in selected cases.

"LET LUNGS ALONE." There are volumes of wisdom in Woods Hutchinson's<sup>5</sup> three words, which direct our therapeutic activities into their most profitable channel, that of raising nutrition by open air, rest, and feeding, and thus counteracting the dangerous proclivity traced in the consumptive by Robin and Binet, to overdraw the oxygen supplies, and to overutilize them in self-combustion.

LET THE OPEN AIR BE BROUGHT TO THE PATIENT IF THE PATIENT CANNOT GO TO THE OPEN AIR. This principle is worked out by C. T. Carpenter<sup>6</sup> in the shape of a respiratory mask to be maintained in firm apposition by means of a net cap. Two tubes of coiled aluminum wire (one internal to the other) established the connection between the mask and the aperture in the wall or window. Open-air respiration is obtained in this way without any move or disturbance on the part of the patient.

HÆMOPTYSIS AND ITS TREATMENT. *The Possibility of a Connection between the Pneumococcus and the Tendency to Hæmoptysis* is strongly indicated by some recent observations made at the Phipps Institute, by L. F. Flick, M. P. Ravenel, and J. W. Irwin.<sup>7</sup> This line of inquiry was suggested by the hemorrhagic character of pneumonic sputum. Four cases of pulmonary hemorrhage were carefully investigated for the presence of pneumococci, and these were found.

SOME CONSIDERATIONS ON THE TREATMENT OF INTERNAL HEMORRHAGE BY THE USE OF DRUGS are based by W. B. Dixon upon work

<sup>1</sup> British Medical Journal, August 19, 1905.

<sup>2</sup> Journal of the American Medical Association, October 7, 1905.

<sup>3</sup> Medical Record, December 9th.

<sup>4</sup> Medical News, October 7, 1905.

<sup>5</sup> Medical Record, April 29, 1905.

<sup>6</sup> Medicine, Chicago, November, 1905.

<sup>7</sup> Medical News, September 9, 1905, p. 492; Journal of the American Medical Association, September 23, p. 944, and October 7, 1905.

done at the Pharmacological Laboratory of the University of Cambridge and elsewhere. Dixon's paper<sup>1</sup> supplies us with some definite statements which are most welcome practical aids.

*Local Treatment*, where it can be applied, is by far the most satisfactory; and it aims either at *blood coagulation*, as for instance by ferric chloride or the tannins, or at *vasoconstriction*, as by adrenalin, cocaine, or digitalis; but it is only available in hemorrhage from the stomach, the nose, the uterus, or other parts where the drug actually comes into contact with the bleeding point.

*General Treatment* is less satisfactory, for the drug must first pass into the circulation, and it may undergo change in the body, which renders it inert. But supposing the drug to have retained its activity as a vasoconstrictor, its effect on the other vessels may entirely overshadow the effect on the bleeding vessels, so that the large increase in general blood pressure may go to dilate the constriction of vessels with less energetic innervation. Gallate of sodium which reaches the blood in the proportion of only 1 per cent. (Stockman) after the administration of tannin, is rather a dilator of vessels than a constrictor. *Adrenalin* is, according to Dixon, destroyed in the stomach, no effect being traceable on blood pressure even after 60 minims of the 1:1000 solution given by the mouth; whereas 2 minims into the vein raises the blood pressure and accelerates the heart. When the injection is made *subcutaneously* the pressure remains unaltered (Janeway, Elliott, and Dixon).

Other drugs (besides adrenalin injected into the vein), such as ergot, digitalis, lead, are effective as vasoconstrictors when administered either by the mouth or subcutaneously; but they take much more action upon the splanchnic vessels than upon those of the muscles of the brain, of the liver, of the lungs, or upon the coronary vessels—the result being a congestion of these organs. This is intelligible when we find that the lungs and coronary vessels have no vasomotor nerve supply, and the brain and liver scarcely any; and that the action of adrenalin, for instance, is conveyed through the nerve endings of the sympathetic in the muscles. It is owing to this too that adrenalin quickens and invigorates the cardiac contraction.

*Ergot* acts, not upon nerve endings but nerve centres, and brings about the same splanchnic vasoconstriction and congestion of liver, lungs, and meninges. Its action upon the heart, obtainable in the isolated heart, is remarkable and important. The cardiac strength and the output are considerably increased, more than by digitalis, but without any slowing of the beat. Moreover, its action lasts for hours instead of minutes, as in the case of adrenalin. An injection of ergot thus raises the blood pressure both through its cardiac and through its vasoconstrictor effects,

<sup>1</sup> British Medical Journal, March 24, 1906.



from which the coronary, the cerebral, and the pulmonary circulations are exempt. Dixon, therefore, regards it as contraindicated in cerebral and pulmonary hemorrhage, but indicated in hemorrhage within the splanchnic area.

In the digitalis group, (1) squill, (2) digitalis, and (3) strophanthus stand in descending order of efficiency as vasoconstrictors. Squill acts not only upon the nerve endings but upon the muscles. Nevertheless it labors under the same disability of causing dilatation of the coronary vessels and of those of the lungs and brain. Strophanthus, which is intensely toxic to the myocardial fibres (eight or ten times more toxic than digitalis), nevertheless has little effect upon the smooth fibres of the coronary vessels.

As regards other drugs, such as veratrine, barium, and certain of the heavy metals, particularly lead, which act directly on all forms of muscle and produce considerable and very persistent constriction lasting longer than that produced by a nervous action, it is doubtful if they produce other effects than passive congestion in the liver, lungs, and brain, and if in their only legitimate sphere, that of intestinal, uterine, or other hemorrhage from the splanchnic vessels, their action is desirable.

If then the tannins, adrenalin, digitalis and its allies, ergot, veratrine, barium, and lead are all worse than useless for hæmoptysis or hemorrhage from the brain or the liver, what are to be our drugs if any? To prevent any stimulation of the heart, or that vasoconstriction so readily excited reflexly by any mental disturbance, the most efficient help is morphine, which has no action upon the heart or vessels directly but removes the causes of reflex acceleration of pressor effects. Next, to promote coagulation, calcium chloride is the drug *par excellence*; and to obtain its effect quickly, Dixon recommends the deep injection into the subcutaneous tissue of 1 to 2 grains of the salt. He states that this will reduce the time of coagulation of the blood of a healthy man to about one-half. Lastly he draws attention to C. J. Coleman's recent experiments, showing that saline infusion, which is sometimes resorted to after severe hemorrhage, increases the blood coagulation time even occasionally to as much as twice or thrice the normal. He does not disguise his belief that the cessation of the hemorrhage is often spontaneous, and in many cases is retarded rather than helped by our drugs, such as ergot and others.

*Vasodilatation is the indication* according to E. Temple Smith.<sup>1</sup> He follows the practice of F. E. Hare and adopts his principles, which are also those of Foxwell and of Mitchell Bruce. Most vasoconstricting styptics, such as adrenalin, ergot, and hamamelis, tend to raise arterial

<sup>1</sup> British Medical Journal, April 21, 1906.

pressure, and are theoretically contraindicated. This view was also stated recently by M. Gaillard, by Dufour, and by Lermoyez.<sup>1</sup> We should not forget that the same drugs are constipating, and that free purgation is a primary indication. A. Martinet,<sup>2</sup> on the other hand, has found adrenalin of value. It is important to note the testimony of C. F. A. Moss, of Antananarivo, as to the efficacy of amyl nitrite in gynecological cases of secondary hemorrhage and of hemorrhage in extra-uterine gestation. Turpentine has its advocates.

Experiments upon animals show that the effect of amyl nitrite is to lower the blood pressure in the aorta, and to increase it in the pulmonary artery. These experimental results lead Soulier and F. Pie<sup>3</sup> to ascribe the good results which they have witnessed in four cases of hæmoptysis to the joint influence of a systemic vasodilatation and to a pulmonary vasoconstriction.

Gelatin is held in high esteem by Dumarest and Bayles<sup>4</sup> for subcutaneous injection as serum-gelatin; and as an article of diet (20 grams for weeks) by De la Camp,<sup>5</sup> who believes in the dietetic treatment of phthisis above all others, as serums and drugs such as cinnamic acid have proved failures.

*The Postural Treatment of Hæmoptysis.* Hypostatic congestion supervenes in the aged and feeble as a result of continued decumbency and is often amenable to elevation of the shoulders. The success of that life-saving procedure led C. G. Higginson<sup>6</sup> to use the same precautions in cases of hæmoptysis. The result was most favorable, and he urges this simple method as a routine treatment. The patient is to be kept in the half-sitting posture day and night whilst the hemorrhagic tendency lasts.

Many years ago a well-known Davos physician had arrived at the conclusion that as so many of the hæmoptyses occurred in the night and during sleep, patients, so long as they were threatened with a recurrence, should not be allowed to go to sleep. A remedy of this sort is self-condemned. Higginson's suggestion is comparatively harmless; but we must look for some more reliable check, and avoid any discomforting device.

DIET, DIGESTION, AND NUTRITION. The drift of R. H. Chittenden's<sup>7</sup> work tends, to the conclusion that the real needs of the body are much below the amount ordinarily consumed, and that the highest health

<sup>1</sup> Société Médicale des Hôpitaux; Lancet, October 28, p. 1296.

<sup>2</sup> Presse Médicale, November 11, 1905.

<sup>3</sup> Lyon Medical, December 3, 1905.

<sup>4</sup> Ibid., December 10, 1905.

<sup>5</sup> Berliner klin. Wochenschrift, xlii., No. 44.

<sup>6</sup> British Medical Journal, September 9, 1905.

<sup>7</sup> American Medicine, November 11, 1906.



must be based upon frugality. But in phthisis very few stand out for a low diet, although W. H. Prioleau<sup>1</sup> among others reminds us that super-alimentation may be overdone, just as open air is capable of being pushed too far.

Bjorkman's<sup>2</sup> anxiety for the continued functional soundness of the digestion does not exclude a recommendation of frequent though not bulky meals consisting of foods of the highest caloric value, in addition to raw eggs and to cod-liver oil when well borne. Much fluid is to be avoided at meals, though light beer or wines may suit the stomach and are then good.

*A Place for Alcohol in Diet* is also granted by Wolff<sup>3</sup> on the basis of his investigations in connection with 767 sanatorium patients. He is in favor of temperance rather than total abstinence.

*The Raw-meat Diet of Richet.* Further studies in dogs and in man are reported<sup>4</sup> by Richet. Of twelve consumptives dieted by him two did not gain weight, the others on the average gained daily about 97 grams (3 ounces) or 2.04 grams (drachm 0.5) for each kilo (2.5 pounds) of body weight. A first stage patient of 50 kilos (125 pounds) needs when kept in bed 300 grams (7 ounces) raw meat, 50 grams (1.5 ounces) butter, and 350 grams (8.5 ounces) bread as a minimum.

*The Regulation of Diet* should more largely be guided by a study of its effects upon the respiratory exchanges. Robin and Binet<sup>5</sup> report their observations on the relative and dietetic value of raw meat, eggs, and gelatin. As regards raw meat they find that 150 grams (3.5 ounces) per diem is *the maximum* that can be given without overstimulating the tissue exchanges, which in phthisis are already too active. In the same way they conclude that six eggs are better than twelve, for with the larger allowance the respiratory exchange increases by 13.75 per cent., the formation of carbonic acid by 20.84 per cent., and the total consumption of oxygen by 8.78 per cent. Whereas if the number of eggs is reduced to six the respiratory exchanges fall by 20.35 per cent., the carbonic acid by 13.26 per cent., and the total amount of oxygen consumed by 25.34 per cent., whilst the increase in body weight is not diminished. Twenty grams of gelatin added to the hospital diet produce a rapid fall in the respiratory exchanges (from 10 to 18 per cent. of the total amount) in cases where it is well borne. This economizing action remains unimpaired if the daily rations of raw meat does not exceed 100 to 150 grams (3 to 3.5 ounces).

<sup>1</sup> Lancet-Clinic, September 23, 1905.

<sup>2</sup> Merck's Archiv, Journal American Medical Association, May 5, 1906.

<sup>3</sup> Beiträge zur klin. der Tub., iv. Heft. 3.

<sup>4</sup> Revue de Médecine, 1905, pp. 1 and 97.

<sup>5</sup> Lancet, October 14, 1905.

*Systematic Recalcification by a Diet Rich in Lime.* According to M. Ferrier,<sup>1</sup> phosphaturia, which is found to prevail in early phthisis, calls for "decalcification." It is usually (putting aside a few cases of an "essential or nervous" origin) the result of acid gastric fermentation (acetic, lactic, butyric and others), which is apt to be promoted by the use of wine, beer, cider, alcohol, butter, fats, oils, sugar, pastry, and bread itself when made with yeast, and is also promoted by overlapping digestions. Whilst some drinking waters are deficient in lime, a more direct cause of decalcification is the taking of inorganic acids, such as hydrochloric, phosphoric, sulphuric, or of their salts, the acid phosphates and sulphates, or of the organic acids in fruits (oranges, lemons, etc.). All these causes of decalcification by acids should be avoided. Holding by the rule of washing out the stomach by a draught of water half an hour before meals, Ferrier recommends the calcic in preference to the sodic bicarbonated waters. But to ensure this fluid instalment of lime he prescribes a small tumbler of water containing a full dose of calcium bicarbonate. The rest of the desirable excess of lime is supplied in an insoluble form as calcium carbonate and tricalcic phosphate 0.40 gram (grains 6), with sodium chloride 0.35 gram (grains 5), to be taken as a powder with or after each of the three meals. The effect of this is the neutralizing of any excess of acid, and the solution of a corresponding amount of lime for absorption; but in patients with weak digestion, and in the advanced stages, small doses of the calcium chloride itself may be also prescribed. Hard water containing sulphate of lime must be avoided. A warning is also given as to the risk of lactic acid fermentation attaching to the use of milk. The rapid improvement in weight, strength, and digestion observed under this treatment is attributed by Ferrier in part to the rise in the plastic power of the blood, which leads to the healing of early lesions and to a more favorable progress of those further advanced. According to Renon<sup>2</sup> tuberculosis has declined markedly at Vermenton (Yonne) since limekilns have enveloped the town in a cloud of white dust. Good results have also been obtained by E. Sergent<sup>3</sup> by combining with this treatment that by open air and creosote, with avoidance of superalimentation and of fermentatives, including the abuse of fat.

*Sea-water Subcutaneously.* Bonnal<sup>4</sup> (of Arcachon) relates that he first resorted to this method in 1881 as a means of increasing the supply of salts, and found encouraging results from 10 to 20 c.c. injections of perfectly fresh sea-water from the rising tide, duly filtered, which he administered twice or thrice times a week. Larger quantities have not

<sup>1</sup> Société Médicale des Hôpitaux, 1906.

<sup>2</sup> Ibid.

<sup>4</sup> Journal de Médecine de Bordeaux, 1905, No. 42.

<sup>3</sup> Ibid.



appeared to him to possess any advantage. F. Lalesque<sup>1</sup> has arrived at the conclusion that the best dose is 100 c.c. Much larger doses, up to 1000 c.c., were used by Quinton, who has identified his name with the method by preparing the so-called "plasma quinton," which is sea-water rendered perfectly isotonic with blood-plasma. He had discovered that the water of the Atlantic at Arcachon is very nearly isotonic, and attributed to this fact much of the benefit obtained by Bonnal in scrofulous children. A later joint communication<sup>2</sup> deals with fourteen cases of pulmonary tuberculous affection in various stages, three of glandular, and one of cutaneous tuberculosis, which were treated with injections of from 100 to 300 c.c. of isotonic sea-water every third or fourth day—the result was negative in three of the pulmonary cases, but favorable in the remainder of the eighteen cases.

**Opsonic Immunization and the Vaccine Treatment of Tuberculosis.** We have at last entered into a more practical stage in our bacterio-therapeutics, which had previously been entirely tentative and fraught with risks. The fundamental facts demonstrated by A. E. Wright and the theory which he has based upon them, supply a level platform for the rapid extension of the therapeutic lines of bacteriology. The greatness of the advance which we owe to him is shown by the fact that the conclusions worked out in the laboratory are imposing themselves upon the physician as essentials for an intelligent and successful management of his cases. Much remains obscure and incomplete, but a stage has now been reached at which his possession of clear notions as to the recent methods of immunization and as to the latest explanations of their mode of actions is not a mere luxury but vital to the interests of his patients.

**VACCINE TREATMENT OF TUBERCULOSIS.** A. E. Wright<sup>3</sup> aims at obtaining the maximum production of "protective substances" from the minimum inoculations, as he has found that doses previously held to be moderate are more toxic than curative, and set up an excessive phase of intoxication or "negative phase." The subsequent "positive phase," of raised antibacterial power, which may last about a fortnight or longer, is strongest when obtained from minute doses of the powdered tubercle bacilli, not sufficient to produce any constitutional disturbance, and varying from  $\frac{1}{1000}$  to  $\frac{1}{600}$  mgrm. The advantage gained is renewable, and it may thus confer a continuance of resistance, and some progressive gain, but it is not strictly cumulative. It is, therefore, useless to repeat the inoculation until the effect of the previous immunizing stimulation is gone or passing off.

Wright's views are also lucidly expounded by R. H. Urwick.<sup>4</sup> As the

<sup>1</sup> Journal de Médecine de Bordeaux, 1905, No. 39.

<sup>2</sup> R. Quinton et R. Simon, Gaz. des Hôp., 1905, No. 70.

<sup>3</sup> Lancet, December 2, 1905.

<sup>4</sup> British Medical Journal, July 22, 1905.

attempt to free the organism from the bacilli of tubercle by antiseptics is recognized to be hopeless, the only other chance of destroying them is to promote by the injection of vaccines the formation of protective or, in Ehrlich's language, of "tuberculotropic" substances.

Of these there are two kinds. The agglutinins combine chemically with bacilli and paralyze them—the opsonins, which Wright regards as contained in the serum or plasma, alter the bacilli so as to render them an easy prey to the phagocytes. The "*opsonic index*," or the activity of the opsonin, is measured by placing together in a capillary pipette equal quantities of the serum to be tested, of blood cells, and of a bacillary emulsion. After twenty minutes' stay in an incubator the contents of the pipette are stained and examined. The average number of bacilli taken up by the phagocytes gives the "*phagocytic index*." The opsonic index is obtained by comparing this phagocytic index with that of healthy subjects. Urwick finds that the latter present little difference and little variation from day to day in their opsonic index, but in tuberculosis the index fluctuates considerably. Its depressions or "negative phases" are due to a natural inadequacy of the mechanisms of immunization, or to their prostration by overwhelming doses of tuberculous autoinoculation. Its rises or "positive phases" are the result of autoinoculations or artificial inoculations just sufficient to act as a stimulus. The essence of the therapeutic method consists in so timing and so graduating a series of inoculations as to perpetuate the positive phase, and, therefore, the bactericidal activity of the organism.

INFECTION AND IMMUNITY. Theobald Smith, regarding the human bacillus as highly virulent in proportion to man's relatively high degree of resistance, uses killed bacilli (killed by exposure to a temperature of 60° C.) grown on media resembling as nearly as possible living human tissues. This system of partial immunization, whilst it protects the individual by raising the resistance, tends rather to perpetuate than to annihilate tuberculosis by intensifying the virulence of the infecting material which may be transmitted from the subject immunized.

THE ACTION OF YEAST IN TUBERCULOSIS AND ITS INFLUENCE ON THE OPSONIC INDEX have been studied by W. R. Huggard and E. C. Morland<sup>1</sup> in thirty-six cases, with satisfactory results both locally and as to the general condition. Only six patients (not included in that number) were unable, or unwilling, to continue the treatment. A rise in the opsonic index was noted early and seemed to be persistent; and there was also an early increase in the number of leukocytes; but after longer treatment their number fell below that in the average of phthisical patients. It is still a question whether the beneficial effect is due to the

<sup>1</sup> British Medical Journal, October 14, 1905.



nuclein, to the enzymes, or to the resulting products of fermentation and of metabolism.

THE SALUTARY EFFECTS OF PARACENTESIS UPON THE LUNG IN BACILLARY PLEURISIES would seem, according to H. Doerfler,<sup>1</sup> to be even greater than those previously attributed to the mechanical influence of the effusion itself. He even contemplates the possibility of artificial effusions being induced for the sake of the advantage which he believes is to be derived from the occurrence of a considerable increase in the pulmonary circulation when the lung is relieved of pressure.

IODIN-FORMIC ACID SOLUTION has been used by Heinrich Stern<sup>2</sup> for ten years in cases of phthisis, with good results in 70 per cent. of them; also in syphilis. He has also used formic acid in various other affections for sixteen years. The reader is referred to his valuable and interesting paper for an historical account of the therapeutics of formic acid, and for much useful information.

### THE PLEURA.

**The Diagnosis of Pleurisy.** GALVAGNI'S METHOD, reported by Prodi,<sup>3</sup> consists in oral auscultation. When the chest-piece is held in front of the open mouth the adventitious sounds produced within the lung may be heard, but the more distant pleural sounds are not audibly conducted. Any doubtful crepitations heard on applying the stethoscope to the surface of the chest may thus be differentiated either as friction sounds or as pulmonary crepitations or rales.

E. Weisz<sup>4</sup> has noticed that the utterance of the consonant "D" is accompanied by a protrusion of the second and third intercostal spaces in the upper pectoral region, and of some of the axillary interspaces. He has also observed that when a pleural effusion is present it is the means of conveying a similar protrusion of the surface of the chest. This may be utilized as a means of determining the lower boundary of an effusion and the upper boundary of the liver or of the spleen, but I have not tested its value. Fortunately that delimitation is easily made by ordinary careful percussion.

THE IDENTIFICATION OF PLEURAL FLUID BY BIMANUAL COMPRESSION of the thorax is a good old method recently brought up again by Beaufumé.<sup>5</sup> It consists in applying one hand to the spine and lower ribs of the upright sitting patient, and the other hand to the front of the suspected side of the chest, with its long axis parallel to that of the

<sup>1</sup> Deutsch. Archiv f. klin. Medizin, Band lxxxiv., Heft 1 und 2.

<sup>2</sup> Journal of the American Medical Association, April 28, 1906

<sup>3</sup> Riforma Medica, 1905, No. 33.

<sup>4</sup> Präger med. Wochenschrift, 1905, p. 261.

<sup>5</sup> Tribune Médicale, 1905, No. 26

thorax. The thoracic resilience is then compared with that of the normal side.

GROCCO'S PARAVERTEBRAL TRIANGLE OF DULNESS, which was fully described and illustrated in my last September's report (p. 45), has been looked for and obtained in children by M. A. Vignola,<sup>1</sup> and my own observations hitherto entirely agree with his. But a long series of competent observations is wanted to prove the absolute reliability of the sign even in spite of the peculiar degree of resonance of the puerile thorax.

Additions to the literature, if not to the knowledge, of this sign have also been made by C. Rauchfuss<sup>2</sup> and by A. Plessi.<sup>3</sup>

A RHYTHMIC LATERAL DISPLACEMENT OF THE HEART AS A SIGN OF UNILATERAL PLEURITIC EXUDATION was described, in 1902, by C. L. Greene, of St. Paul. He has now further<sup>4</sup> confirmed his observations by percussion, by auscultatory percussion, and by the *x*-ray. The diagnostic value of the sign cannot be doubted; but its usefulness is limited by the requirement of deep expirations, which in acute pleurisy might only be possible with the help of morphine. *The shifting of the heart toward the pleural effusion during inspiration* is doubtless to be explained by the uncompensated expansion of the sound side of the chest. It is clear that no inspiratory movement originates at the root of the collapsed lung which could possibly drag the heart toward it, and that any real shifting in space must be due to the pull of the diaphragm transmitted by the fluid, though some of the shifting may perhaps be only in appearance cardiac, and may really belong to the respiratory movements of the sternum, spine, and ribs on the sound side.

**Pleurisy as a Symptom of Abdominal Disease.** B. Auerbach<sup>5</sup> inquires into the relative frequency of secondary pleurisy in abdominal disease and of its incidence in the right and in the left pleura respectively. Tilger's estimate of its percentage in 122 cases of general peritonitis was about 25, a figure which is almost the same as the percentage found at the Charité in puerperal peritonitis. In chronic hepatic cirrhosis Villani reports that a small right basic effusion is a constant result, and Caro makes out that a pleuritic process of one or of the other kind takes place in 16 per cent. of all cases of cirrhosis. But Auerbach dwells specially upon the pleurisies accompanying subphrenic abscess, the ratio being here as high as 101 to 179. It was to be expected that the pleurisy should occur on the same side as the disease, since it has been

<sup>1</sup> Gazz. degli Osp., February 11, 1906.

<sup>2</sup> Verhdl. der Vers. d. Naturforscher und Aerzte.

<sup>3</sup> Rivista crit. de clin. med., 1905, No. 26.

<sup>4</sup> American Journal of the Medical Sciences, March, 1906.

<sup>5</sup> Münch. med. Wochenschrift, March 7, 1905, p. 449.



found that no free communication obtains between the lymphatics of the right and of the left half of the diaphragm. It is, however, significant that in general peritonitis the right pleura is by far the more commonly affected (*e. g.*, out of thirty cases both pleuræ were affected in ten cases; only the right pleura in nineteen; only the left pleura in one); perhaps because the transphrenic perforating lymphatic channels are, according to Küttner, limited to the right side in 75 per cent. of the subjects examined; largely too on account of the relative prevalence of right-sided peritonitis, which is best explained in connection with the suprahepatic capillary space and capillary suction. The recognition of a pleurisy, even though slight, where there is any question as to an abdominal affection, as in Auerbach's five cases, may guide our diagnosis and our treatment, and may sometimes lead to the timely exploratory puncture of a subphrenic abscess.

**Bacillary Pleurisy.** THE RELATIVE FREQUENCY OF A TUBERCULOUS ORIGIN IN SO-CALLED "IDIOPATHIC PLEURISY" has been much debated. J. G. Emanuel<sup>1</sup> estimates it at 70 to 75 per cent. Osler's postmortem findings only gave thirty-two in one hundred and one cases of acute pleurisy; but Netter's inoculation experiments led him to conclude that 40 per cent. of all primary exudates were tuberculous, and those of Eichhorst gave a percentage of 62; whilst the more bulky inoculations of Le Demany yielded a percentage of 85. Jousset by means of his well-known method found tubercle bacilli in every one of twenty cases of primary serofibrinous pleurisy. Von Zebrowski,<sup>2</sup> whose method is entirely different, identified the bacillus in only 55 per cent. of the primary and in 83 per cent. of the secondary pleurisies. Poynton and Paine have succeeded in detecting in pleural effusions the *diplococcus rheumaticus*, and in producing rheumatic pleurisy experimentally.

As regards the diagnostic value of *cytodiagnosis* Emanuel remarks that whilst a majority of lymphocytes goes to prove tubercle, a majority of polymorphonuclears does not prove the absence of tubercle if the case be one of long standing. Cytodiagnosis will not assist in distinguishing a tuberculous from a rheumatic effusion, for in both cases it is the rule to find a preponderance of lymphocytes. In such cases, however, an examination of the blood shows in tuberculous pleurisies a leukopenia, while a moderate amount of leukocytosis is the rule in rheumatic pleurisies.

THE TECHNIQUE OF THE EXAMINATION OF PLEURITIC FLUID FOR BACILLI has progressed to a further stage. Jousset's *inoscopy* is to be abandoned, but we owe to it the idea of E. v. Zabrowski's<sup>3</sup> method.

<sup>1</sup> Lancet, January 13, 1906.

<sup>2</sup> Deutsch. med. Wochenschrift, September 7, 1905, xxxi., No. 36.

<sup>3</sup> Ibid., 1905, No. 36.

Jousset had endeavored to catch the few bacilli in the meshes of the jelly-like clot, and to concentrate them by artificially digesting the clot and by centrifugalizing. This device was popular because successful. But now, according to von Zabrowski, what is really wanted is to prevent the fluid from clotting; then only can we expect to get a good deposit of bacilli. With this view 500 c.c. of a 0.5 per cent. solution of sodium chloride are to be placed in the receiver before the serum is allowed to flow into it. After standing for twenty-four hours the bottom of the column of fluid is centrifuged, stained, and examined. An important advantage of this method is the avoidance of any interference with the staining capacity of the bacilli such as is stated to occur as a result of artificial digestion. He has not, however, been able to convince himself that all the bacilli found in "primary effusions" are invariably tubercle bacilli. It is to be hoped that a method so much more simple may also prove itself to be even more efficient than inoscopy.

**THE CYTOSCOPIC AND THE BACILLOSCOPIC TESTS.** They entail for the practitioner simply a careful collection and preservation of the fluid for laboratory study.

*Cytoscopy* judges of the significance of the cells which have been collected by centrifugalizing a sufficient volume of the fluid. It is quickly performed if preliminary sedimentation should not be required. Wilfred Hadley<sup>1</sup> thinks that in the three large groups of effusions, (1) inflammatory or septic, (2) tuberculous, and (3) mechanical, the cell elements will be respectively as follows:

1. *Septic*. Cells almost exclusively polymorphonuclear, with a few red cells and an occasional large mononuclear. 2. *Tuberculous*. Cells almost exclusively small mononuclear (lymphocytes), only rarely a polymorphonuclear cell. 3. *Mechanical*. Cells much fewer in number, chiefly flat endothelial cells in flakes.

But he makes the following reservations: (a) The older any effusion the greater the number of polymorphonuclears. (b) Therefore a majority of polymorphonuclears, if the effusion be of long-standing, does not disprove tubercle. (c) Serous effusions as they turn to pus will show an increasing number of polymorphonuclears. (d) Pneumonia supervening would also raise their number.

*The agglutination test* is not so reliable even in the best circumstances; and it needs considerable technical experience for its successful performance.

Hadley feels compelled to agree with those who regard the vast majority of primary serofibrinous effusions as bacillary. William Osler in commenting upon this point referred to the confirmation from the frequency

<sup>1</sup> British Medical Journal, October 21, 1905.

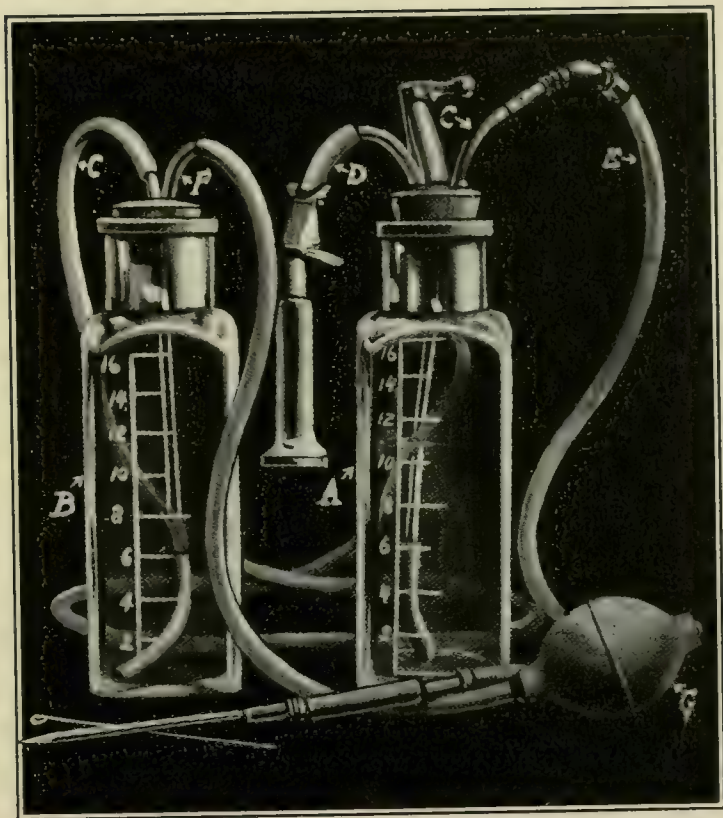


with which phthisis eventually develops. He also called attention to the acute mode of onset not uncommonly presented by an attack of tuberculous pleurisy. The affection should not be regarded as always insidious.

THE TREATMENT OF PLEURAL EFFUSION. *A simple apparatus for emptying and aërating the pleura* has been devised by William M. Donald and R. E. Mercer, of Detroit.<sup>1</sup> The graduated-bottle *A* has three tubes running through the cork. One extending nearly to the bottom is connected to a similar one in bottle *B* with a tube about four feet in length; the other two extend just through the cork, one of them being connected to a short glass tube filled with sterile absorbent cotton and the other with a tube leading to the needle. Bottle *B* has two tubes; one, as in bottle *A*, reaching nearly to the bottom, and the other, a short one, may be used to withdraw the overflow, or by the attachment of an aspirator pump to obtain greater suction pressure on the other bottle, that is, on the fluid which is being aspirated. This, however, is rarely necessary. All the pressure that is desired can be secured by lowering the second bottle and so increasing the siphon pressure. The bulb is convenient when filling bottles, but must be detached when the instrument is used.

The following is the technique: "Fill both bottles slightly more than half-full of sterile water; insert the tubes until the water fills bottle *A* and flows from the aspirating needle; then close clip on that tube and lower bottle *B*, open clip on air filter, and leave it open until bottle *A* is about two-thirds full of filtered air, then close clip on air tube, and the apparatus is ready for use. Insert the needle in the selected spot on the affected side, open clip on the needle tube, and the pleuritic fluid will immediately flow into bottle *A* and over into bottle *B*. When about eight ounces, or 250 c.c., have been withdrawn, raise bottle *B* and the water will flow back into bottle *A*, forcing the filtered air in it through the needle into the pleural cavity. By repeating the process, opening the air filter, and refilling bottle *A*, as necessary, the fluid can be withdrawn and replaced by an equal measured quantity of filtered or sterilized water. If it is desired the cotton in the tube can be impregnated with formaldehyde and the pleural cavity can be filled up with this form of air. As formaldehyde is decidedly irritating in its qualities, only a very small quantity of the medicament must be introduced. Bottle *B* can be emptied when full by shutting off the flow from bottle *A* and pouring out the fluid contained in it; or this can be allowed to run out through the overflow tube from *B* into another bottle or vessel. It is only necessary to supply enough air to procure a thorough emptying of

<sup>1</sup> Journal of the Michigan State Medical Society, Detroit, September, 1905; Journal of the American Medical Association, October 21, 1905, p. 1277







the pleural cavity, and the operator may either allow the air to remain or withdraw a small portion of it.

“The advantages of the operation may be summed up as follows: 1. All the fluid can be withdrawn at once. 2. There is no pain and no distress, except from the introduction of the needle. 3. The lung is splinted by the cushion of sterilized air and is permitted to expand only very slowly. 4. The air pressure prevents the accumulation of the fluid into the pleural cavity. 5. The apparatus can be improvised by any physician. 6. The method, it is believed, is especially adapted to cases of old effusion, and to cases with a tendency to reaccumulation.”

*Adrenalin chloride injections for serous effusion*, after Sir James Barr's method, have been used in five cases of ascites and two of pleural effusion by H. W. Plant and P. Steele,<sup>1</sup> with beneficial results in spite of sharp pain set up in the abdomen, and a pyrexial rise of 0.5° to 2° F. within half an hour. They believe that in ascites peritoneal adhesions are induced by the irritation. Their method consists in evacuating the serous collection as completely as possible through a two-way trocar and cannula, and injecting, through the cannula, still *in situ*, 1 drachm adrenalin chloride (1:1000) diluted to  $\frac{1}{2}$  ounce with sterile water. In the case of the pleura it might perhaps be objected that adhesions, if they should occur, are not an altogether desirable fulfilment.

*The “Preliminary” Intraserous Injection Method* This method, practised by me first in the abdomen some years back, but foreshadowed a long time ago by Stephen Hales, consists in the injection of remedial agents (at present of adrenalin) into the serous fluid before its removal. I now use it as a preliminary to pleurocentesis, and repeat it one, two, or three days prior to the intended operation, as part of a plan of treatment to encourage absorption and to obviate any secondary effusion. The result is often, as in the case reported by Miss Flora Murray and myself,<sup>2</sup> a spontaneous reabsorption without any need for operation. A further recommendation is the safety of the proceeding, as the adrenalin solution is not to be injected unless the injection syringe can first draw a few drops of serum out of the chest, to make quite sure that the dose which is then injected with the sample of serum will undergo exceedingly gradual absorption, owing to its great dilution by the serous collection. In this case four injections were made within ten days, but a quicker result might have been obtained with larger doses than the dose of 10 minims which was used.

**Empyema.** THE MECHANISM OF PULSATING EMPYEMA has been the subject of many theories, all of which have postulated that the pulsation must be conveyed from the heart, either through the intermediary of

<sup>1</sup> British Medical Journal, July 15, 1905.

<sup>2</sup> Ibid., April 28, 1906.



a pericardial effusion (Traube, 1872) or without that intervention (Fränkel, 1875); or else owing to the adhesion of a completely collapsed lung to the pericardium (Comby, 1881), or to the unusual thickness of the pleural wall in the vicinity of the heart (Kussmaul); or again as a result of the presence of air (Féréol, 1884), although it is well known that pyopneumothorax is not an uncommon, but pulsation of the parietes a rare occurrence. A novel explanation is suggested by W. J. Calvert,<sup>1</sup> who believes that the anomalous pulsation, observed most often on the left side, is transmitted from the thoracic aorta. The requirements are fulfilled which are necessary for the result, viz., a strongly pulsating organ in contact with the pleural wall, a distention of the pleural sac with fluid, air, or solid material, and a collapsed condition of the lung. So long as the lung contains air it is capable of absorbing the aortic pulsations; but finally it becomes completely collapsed. The fluid then becomes capable of transmitting the aortic pulsations in consequence of its increased tension. The diaphragm also probably has pulsations communicated to it and these may be absorbed by the abdominal organs.

Calvert's explanation still leaves us without a clear answer to the question why serous effusions, the tension within which is often sufficient, so rarely give rise to the pulsation; and again to the further question why it is sometimes observed in right-sided empyemas. The latter difficulty is only partly met by the statement that an examination of transverse sections of the thorax shows that the right pleura when distended may be pushed against the aorta. As regards the former difficulty, it is true that a few cases of pulsating serous effusions have been recorded, and that in certain cases, when part of the fluid has been withdrawn, the pulsation has been observed to cease. This accords with the explanation given. But it may be pointed out that empyemas differ in two important features from serous accumulations. They are invariably lined by a pyogenic membrane which often acquires considerable thickness and rigidity; and their tension is apt to be considerably greater than that of serous effusions, and in that degree favors wave transmission.

DOUBLE EMPYEMA studied in 114 recorded cases by Hellin<sup>2</sup> shows a mortality of 30.1 per cent. and a predominance in the male sex (66.6 per cent. *versus* 33.4 per cent.) and before the age of fifteen years (90 per cent. of all cases). In his own patient the second empyema was evacuated five days after the first. It is well known that simultaneous bilateral paracentesis has been performed successfully in some cases.

A CASE OF ALMOST COMPLETE DISAPPEARANCE OF THE LEFT LUNG in a mortar-like collection (about four pints) containing chiefly phos-

<sup>1</sup> American Journal of the Medical Sciences, November, 1905.

<sup>2</sup> Berliner klin. Wochenschrift, 1905, No. 45

phate of lime and organic remnants of cells with abundant cholesterol, within the pleura of a man aged thirty years, has been put on record by Samuel West,<sup>1</sup> who regards the condition as resulting from an empyema in early life. The medical attendant had been aware of its existence for twelve years, and West did not proceed beyond repeatedappings. The patient succumbed to intercurrent bronchitis.

THE VARIETIES OF PNEUMOCOCCUS EMPYEMA, taken in their order of gravity, are stated by J. G. Emanuel<sup>2</sup> to be as follows:

1. The mild variety of uncomplicated empyema in which the pneumococcus remains localized to the pleural cavity.

2. The more severe variety, in which the pneumococcus spreads from the pleural cavity *via* the lymphatics, and gives rise by direct extension to pericarditis, peritonitis, or to empyema of the opposite side. This class includes those cases described by F. Taylor under the term polyserositis or polyorrhomenitis (malignant inflammation of serous membranes) when they are due to the pneumococcus and when they begin in the pleural cavity.

3. The very severe variety in which the pneumococcus gains access to the blood stream and gives rise by metastatic infection to such complications as meningitis, cerebral abscess, endocarditis, subcutaneous abscess, and purulent arthritis. In many cases of pneumococcal septicæmia an empyema occurs which is only the expression of a localization of a general blood infection, but in those cases it appears as if the general septicæmia results from the empyema.

UNCONTROLLABLE HEMORRHAGE is one of the risks attaching to operations upon the chest wall for empyema. Thomas Oliver, of Newcastle-upon-Tyne,<sup>3</sup> gives three cases of this kind from his own experience; but he does not refer to hæmophilia which if present might have explained the fatality of an otherwise trifling surgical interference. He suggests, however, that the blood may have been abnormally fluid in connection with the pyrexial state.

**Pneumothorax.** THE INVERTED ACTION OF THE DIAPHRAGM IN PNEUMOTHORAX AND EFFUSION has been studied by L. Hofbauer,<sup>4</sup> who uses the expression "paradoxical contraction of the diaphragm." This condition was first seen by means of the *x*-rays, by Kienbock, in 1898, in the shape of an "inspiratory rise and an expiratory fall of the horizontal level of fluid" in a case of hyopneumothorax.

My own description of this remarkable phenomenon was given, in 1890,<sup>5</sup> in a paper "On Pneumothorax and the Value of its Treatment by Aspiration; with Observations on the Composition and Pressure of the

<sup>1</sup> Clinical Society, November 24, 1905; British Medical Journal, December 2, 1905.

<sup>2</sup> Lancet, January 13, 1906

<sup>3</sup> Ibid., March 31, 1906, p. 901

<sup>4</sup> Zentralblatt f. inn. Medizin, July 1, 1905.

<sup>5</sup> Transactions of the Medical Society of London, 1890, vol. xiii. p. 56.



Gaseous Contents of the Pleura," in terms which are almost identical with those used by Hofbauer. These are his conclusions:

The paradoxical movement and the rest of the diaphragm are both due to the loss of the "vital retraction" of the lung, which normally draws up the relaxed diaphragm during expiration. If with this collapse of the lung there should coexist no pleural effusion the relaxed diaphragm will remain "at rest" and horizontal. If, on the other hand, it should be weighted by an exudation it will sink into the abdomen, where it relaxes in expiration, and this is "the paradoxical movement."

A MOBILITY OF THE HEART IN LEFT PNEUMOTHORAX is described by W. J. Calvert<sup>1</sup> in the interesting case of a lad, aged nineteen years, who had been ill six weeks, and had suddenly developed pneumothorax on the day of his admission. The cardiac dulness extended 5.5 cm. into the right chest, and to the left of the sternum in the recumbent posture the heart sounds were weak as well as the impulse. But when the patient was made to sit up and to lean forward a forcible impulse was felt owing to the heart having swung forward into contact with the anterior chest wall. This is just the movement which would occur if the heart were allowed to swing freely from its points of attachment. But we must remember that the first essential is sufficient space. In most chests the distance between the sternum and the spinal column does not admit of a movement of these displaced hearts of perceptible degree, and this explains why the phenomena had not been observed before.

SPONTANEOUS PNEUMOTHORAX. Parkes Weber's<sup>2</sup> inquiry into the causes of this condition is referred to by W. Gifford Nash<sup>3</sup> in connection with the case of a healthy lad whose pneumothorax was apparently due to muscular exertion. The "rupture of an emphysematous bleb" or the "tearing of a pleural adhesion," which were both present in a fatal case of intrapleural hemorrhage recorded by G. Newton Pitt,<sup>4</sup> did not appear to be a likely explanation in this patient, who was also free from the signs of tuberculosis.

LEFT RECURRENT NERVE PARALYSIS was apparently due to a right pyopneumothorax in Ohm's interesting case of phthisis. After death two of the adjoining glands were enlarged: they probably had increased the strain which was thrown upon the nerve by the considerable displacement of the heart and of the liver. The aphonia and the vocal cord paralysis had been relieved a few days before death by the marked re-expansion of the lung brought about by Bülow's drainage.

<sup>1</sup> Johns Hopkins Hospital Bulletin, September, 1905.

<sup>2</sup> Clinical Society Transactions, 1900, p. 171.

<sup>3</sup> Lancet, February 17, 1906.

<sup>4</sup> Clinical Society Transactions, 1900, p. 95

THE TREATMENT OF THE PNEUMOTHORAX OF PHTHISIS is well reviewed by Parkes Weber,<sup>1</sup> and special reference is made to the condition of *valvular pneumothorax* where distress may arise from excessive tension. This may be relieved by puncture and some modification of Bülow's method for paracentesis, as for instance by West's plan of using a cannula with an India-rubber tube attached, the other end of the tube being allowed to hang down into a basin of sterilized water; or the air being allowed to escape through a cannula into antiseptic dressings. The necessity for paracentesis probably arises only in a very limited number of cases.

A novel treatment adopted by H. v. Schrötter, in a lad recently seized with right pneumothorax after a short period of pyrexia, consisted in the aspiration of air from the pleura and the introduction of oxygen into the lung by a metal catheter inserted into the right bronchus. At the first sitting about 2200 c.c. of air were removed from the right pleura, and at the second sitting 500 c.c. This method is too complicated for general adoption. It reminds us of L. Brauer's<sup>2</sup> apparatus for the maintenance of high pressure of air in the lungs during operations with an opened pleura, which he also regards as available for the treatment of the pneumothorax of tuberculosis.

Whilst the "terminal" stage offers no scope for surgery, earlier cases too might be none the worse for delay in operating; nay, some cases of serous hydropneumothorax have been known to heal. Of the purulent cases those more advanced are only fit for a "paracentesis;" but, where there is little lung disease, incision as for empyema is warrantable, and in exceptional cases Estlander's thoracoplasty may be required to complete the cure. L. Spengler, of Davos, reports out of twenty patients an apparent cure in five (aged between eighteen and thirty years), although the operative treatment was limited to tappings. Another striking recovery was that of F. Penzoldt's patient, a medical man, aged thirty years, whose left pyopneumothorax after it had become converted into an airless collection of fluid was repeatedly tapped and injected with iodoform.

**Intrapleural Lipoma.** A remarkable instance of this anomaly, which was probably congenital as the lower left pulmonary lobe was undersized, is reported by R. H. Fitz,<sup>3</sup> with an account of the pneumonia and pericarditis to which the patient succumbed. The lipoma was of huge size, about as large as a newborn infant's head.

<sup>1</sup> Lancet, September 16, 1905.

<sup>2</sup> Mitth. aus den Grenzgeb., Jena, 1904, vol. xiii.

<sup>3</sup> American Journal of the Medical Sciences, November, 1905



## THE BRONCHI.

**Bronchial Colic Due to Calculus.** This is an unusual term, but is well justified by the peculiarities of the case. The patient was a showman and may have owed his bronchial stone (subsequently found to consist of calcium phosphate and carbonate) to the daily use of a lime-light. Although his chest symptoms, and particularly the pains, were severe no adequate signs could be traced in the chest to account for the aspect which he wore of some severe disease. His chronic troubles of cough and expectoration had finally culminated in an acute attack in which severe pains in the right side of the chest and violent paroxysms of cough were leading symptoms. The sudden expulsion after violent paroxysms of cough, of a hard stone as large as a pea, put an end to the entire set of symptoms. Muszkat,<sup>1</sup> who reports the case, had noticed some loss of respiratory activity at the upper part of the right lung, which not improbably may have been the seat of the concretion. As regards the nature of the paroxysmal cough, and of the pain, it is not unreasonable to compare the state of a bronchus, struggling with a calculus to that of the common, or of the cystic duct under precisely similar conditions. The term "colic," in the latter instance, might be said to be an acknowledged metaphor if the word had not really acquired an additional meaning independent of its anatomical derivation. That this meaning, which so clearly expresses the biliary events, as well as those known to occur in the ureter, might also exactly express the bronchial events, none can venture to deny, neither can anyone prove it to demonstration. This doubt is in itself sufficient evidence that our knowledge of the function of the bronchial muscle is still in its infancy.

**Foreign Body in the Bronchus.** The value of the inverted position in sundry chest affections, particularly in small children, for whom it has no risks and little discomfort, is well illustrated by Withers<sup>2</sup> case of severe bronchial affection, with suffocative cough and expectoration, relapsing every ten to twelve days for a period of four and a half months, in an infant, aged nine months. In the alarming dyspnoea of one of the paroxysms the nurse held it with its head down and tapped its back. A quantity of mucus ran out and with it a small safety-pin brooch made its escape. The symptoms were immediately relieved and the patient recovered completely.

**The Treatment of Capillary Bronchitis or Bronchopneumonia,** particularly in children, has been of late years largely that by means of action on the skin. Schopohl<sup>3</sup> gives a bath of ten to twenty minutes, warmed

<sup>1</sup> Berliner klin. Wochenschrift, 1905, No. 25.

<sup>2</sup> British Medical Journal, May 27, 1905. <sup>3</sup> Blätt. f. klin. Hydroth., 1905, No. 4.

gradually from blood heat to 110° F.; wraps the child in a sheet without previous drying, for one or two hours, then anoints the chest with warm oil, and envelops in oiled silk. In bad cases this may be repeated twice daily. James Burnet reports favorably as to the results obtained.

WET PACKING WITH MUSTARD-WATER is strongly recommended by O. Heubner.<sup>1</sup> About one pound of mustard powder is stirred for ten minutes in one and one-half quarts of hot water at 40° C. (104 F.). Into this a piece of linen is dipped; and after wringing it is spread over a blanket, and wrapped with the latter round the child up to its neck, for a period of ten to fifteen minutes. Any adhering particles of mustard are washed off in a bath, and the patient whose skin is intensely reddened is immediately placed in an ordinary luke-warm pack for an hour or even two. As soon as the face becomes flushed and profuse sweating has set in, the child is taken out of the pack, given a second warm bath, and if the body temperature should be very high, a rapid cool affusion; after which undisturbed rest is to be enforced for the remainder of the day. This treatment which may have to be repeated the next day, but never more than once in twenty-four hours, is often quite successful, but not in all cases.

A. Herzfeld's method<sup>2</sup> differs from the preceding in the addition of spirits of wine. About 15 to 20 c.c. (3.5 to 5 drachms) of spirits of mustard are added to a mixture of 250 c.c. (8 ounces) alcohol with an equal amount of water. A large piece of flannel is lightly wrung out of this and wrapped round the entire trunk, under a larger piece of dry flannel. After a lapse of about one-half hour or when the skin has become quite red, a simple pack of equal parts of alcohol and water is substituted, and one or two hours later this is removed and the patient put under dry coverings. The procedure may be repeated more than once the same day. This treatment has proved successful in some of the worst cases.

The principle of these methods is the same as that of the hot bath gradually raised from 36° to 40° to 45° C. (97.8° to 104° to 113° F.), and followed by the pack, which was recommended by Schweninger thirty years ago. It aims at breaking up the inflammatory stasis in the lung by a wholesale cutaneous hyperæmia, whilst powerful stimulation is afforded to the heart and to the nervous system.

**Intratracheal Injections** with a basis of olive oil are still advocated by Mendel<sup>3</sup> in *pulmonary tuberculosis*, although Colin Campbell has for many years given reasons for preferring glycerin. Mendel's method claims to be protective against laryngeal tuberculosis by sweeping the

<sup>1</sup> Therapie der Gegenwart., 1905, No. 1.

<sup>2</sup> Therapie der Monatsschrift, May, 1905.

<sup>3</sup> Gazette des Hôpitaux, 1905, No. 48.



supralaryngeal regions clean of the adhesive infective mucus. An interval of rest from the daily injections is desirable after a month. Mendel in the *Lancet* for July 15, 1905, recommends a solution of eucalyptol (5 to 10 per cent.) or of gomenol (5 to 50 per cent.) in olive oil.

A BACTERICIDAL ACTION is reported by J. J. Kinyoun<sup>1</sup> not only in pure glycerin, but as a result of its addition (in the proportion of 25 per cent.) to various immune and normal serums. This property is of practical interest to the clinician, in connection with the use of glycerin, advocated by Colin Campbell, as a vehicle for intratracheal injections instead of oil.

INTRATRACHEAL INJECTIONS THROUGH THE NOSE are regarded by Murangos<sup>2</sup> as preferable to the pharyngeal method of Mendel, as the entire injection can be made to enter the larynx. A No. 14 gum-elastic catheter *à boule*, to which is attached a small glass syringe, is passed down the nostril for about five inches until its tip projects beyond the soft palate. The patient breathing quietly with head slightly thrown back the fluid is injected, drop by drop, during inspiration.

A simple and very cheap inhaler has been suggested by M. Ruprecht<sup>3</sup> for the inhalation of ethereal oils and similar volatile fluids. It consists of a glass tube about 2 c.c. wide and 10 c.c. in length, which is filled with wood-wool or finest wood shavings from the carpenter's shop. A wide-mouthed bottle might answer the same purpose.

## THE LUNGS.

**Pneumonomycosis Aspergillina.** Although ten weeks after operation G. Schwartz's<sup>4</sup> patient was suffering from symptoms of tuberculosis and from bacilli in the sputum, as no trace of the fungus could be found the case may be reckoned as one of recovery from an unusually severe attack, accompanied, contrary to the rule, with gangrenous changes in the lung and with a gangrenous fetor. The fungus was identified by intravenous injection of an emulsion of the spores into rabbits as *aspergillus fumigatus*. The rabbits succumbed in two and one-half days to infiltration of the liver and kidneys with the mycelium of that hyphomyces, well known to be the most frequent cause of pulmonary aspergillosis, the *aspergillus niger* being rarely met with and the *aspergillus bronchialis* reported only in one instance. The case is also remarkable in the fact that the true nature of the disease was identified;

<sup>1</sup> Journal of Experimental Medicine, November, 1905.

<sup>2</sup> Lyon Médical, June 11, 1905, p. 1286.

<sup>3</sup> Monatsschrift f. Ohrenheilk., etc., Jahrg. 39, No. 3.

<sup>4</sup> Zeitsch. f. klin. Medizin, Band lvi., Heft 1 und 2, p. 120; Med. Rev. of Rev., August, 1905.

and the condition diagnosed as one of acute gangrenous infarction infected by the fungus. In previous cases a clinical diagnosis had been made in only thirteen of the patients, seven of whom were the subjects of chronic symptoms, four recovered spontaneously, and two ended fatally.

**The Efficacy of Bleeding in Relieving Pulmonary Congestion** was accidentally demonstrated in Larcher's<sup>1</sup> patient, aged ten years, who was punctured for the relief of a supposed empyema without any fluid being withdrawn. Some hemorrhage, estimated at one-half ounce, occurred from the puncture, and almost immediately the pain and dyspnoea were considerably relieved. The following day the child was much better, and in five days he was well. Larcher after equally favorable experience in two other cases recommends this "lung bleeding" for systematic use in severe pulmonary congestion. I have never myself resorted to this method; but in all cases of pneumonia seen fairly early my invariable routine is to leech the side affected.

**Pulmonary Atelectasis in Adults** is according to R. Huggard<sup>2</sup> of common occurrence in early phthisis. Huggard gives the results of his systematic study of the areas involved by auscultation practised before and after the patient is made to breathe deeply. In young adults the region first affected is that which intervenes between the apex and the second intercostal space; at a later date the supraspinous and interscapular regions. The treatment suggested is a systematic use of deep respiration for a few minutes every hour, a sure means of strengthening the respiratory muscles. Tight clothing around the chest is often the unsuspected cause of the habit of inefficient respiration, and should be carefully guarded against.

**Asthma.** Ethmoidal inflammation irritating the branches of the olfactory or of the trigeminus is at the root of asthma according to H. Coggeshall,<sup>3</sup> by setting up in the bronchi through the medullary route a reflex muscular spasm or a vasomotor disturbance. Various other contributory influences go to shape the tendency and the workings of the attack; but the ethmoidal factor should be remembered in our treatment.

**DIET AND ASTHMA.** The importance of diet in the treatment of asthma is universally recognized, but not to the same extent its etiological significance. If wrong dietetics are its cause then indeed it is preventable. The respectable number who are of that way of thinking are split up into three groups.

1. An extreme view enjoying a limited support, is to the effect that overeating in itself is the cause, and that the remedy lies in small eating

<sup>1</sup> Gazette des Hôpitaux, 1905, No. 65.

<sup>2</sup> British Medical Journal, October 14, 1905

<sup>3</sup> Medical Record, June 3, 1905.



(or "oligositeism" which is an unnecessary hellenism). Chittenden's demonstration of the remarkably small quantity of food necessary to maintain the body weight is at the root of this theory of asthma. We are told that those are attacked who are unable to meet the labor of digesting so much superfluous food, or to resist the irritating effects of its mal-digestion. Doubtless many cases might be cured by cutting down the number and the complexity of the meals.

2. Others believe that the reduction should bear mainly upon the carbonaceous foodstuffs, bread, pudding, sugar, etc.

3. A third group believe in the entire exclusion of meat, a plan which has been pushed even further by Alexander Haig so as to exclude almost all nitrogenous supplies.

A novel theory has been propounded by Francis Hare<sup>1</sup> in two volumes on *The Food Factor in Disease* (London, 1905) under the name of *hyperpyræmia*. He regards all three systems as useful in varying degrees according to the cases, because they all alike succeed in removing some factor essential for the production of asthma. Hare believes that the normal carbon-equilibrium of the blood, or perfect balance between the carbonaceous intake and its complete oxidation, is liable to be disturbed and a carbonization to take place in excess of decarbonization. The resulting accumulation of unoxidized carbon in the blood constitutes the state of hyperpyræmia. The various pathological processes by which the latter is apt to be corrected or dispersed either in virtue of an increased expenditure or of a diminished intake include asthma, bilious attacks, migraine, gastralgia with anorexia, major epilepsy, acute articular gout, and some other affections.

The asthmatic paroxysm depends according to Hare upon the vasomotor response to hyperpyræmia, and this responsiveness of the vasomotor system may be vastly increased by numerous factors. When this is so, the vasomotor responsiveness (or irritability) becomes a much more important factor in determining paroxysms, and consequently calls more urgently for therapeutic attack than the food factor. And there are many other factors to be considered. Hence it must not be inferred that asthma can always be successfully treated by diet of any kind. Nevertheless, the food factor is usually if not always present, and its due recognition will often make the difference between successful and unsuccessful therapeutics. For those who are inclined to make a trial of the treatment by restriction of the carbonaceous intake, a commencement should be made with asthmatics with a tendency to corpulency, as in them success is much more easily and rapidly attained.

It is obvious that a distinction must be drawn between the satisfactory clinical results obtained and the interpretation which has been placed

<sup>1</sup> New York and Philadelphia Medical Journal, September 16, 1905.

upon them; and that the theory of hyperpyræmia, however plausible clinically, cannot secure full recognition until it has stood the test of physiological inquiry.

GOOD RESULTS FROM ADRENALIN CHLORIDE IN SUBCUTANEOUS INJECTIONS were reported by D. M. Kaplan in 1904. His subsequent results are confirmatory. He has never seen any harm follow the remedy even in arteriosclerosis. He has been at some pains to test the alleged frequency of glycosuria after adrenalin but has never found it in his cases of asthma; indeed in three cases of diabetes, the output of sugar was lessened. Owing to this freedom from any ill-effects Kaplan has gradually increased the dose of the injection, which occasionally has been raised to 20 minims; but each case needs to be carefully studied. Of course this is only a symptomatic, not a curative remedy for asthma.

A SINGULAR CURE FOR ASTHMA is reported by A. T. Short,<sup>1</sup> who saw the remedy and its results, which are still permanent after two and one-half years, in a girl whose asthma had resisted every other influence, including climate. Her sister went to the cemetery for some dry and bleached pieces of skull, which were washed, pulverized, and added to a quart bottle of water. The patient took a teaspoonful of the solution three times daily, with rapid amelioration. Had the powder been swallowed or some solvent been added to it appreciable chemical effects might have been expected from the large proportion of calcium phosphate and carbonate. The treatment indeed would have been almost equivalent to that so strongly urged by Paul Ferrier<sup>2</sup> for phthisis.

SANATORIUM TREATMENT FOR THE ASTHMATIC is a most important practical indication arrived at by S. Kohn.<sup>3</sup> His pathological conclusions incline him to view asthma as a disease rather than as an assemblage of symptoms, so characteristic is the dyspnœa and so different from that of cardiac or pulmonary disease. In the only three autopsies which he could find recorded nothing distinctive was described. Yet, there is some support for the inference that there exists in the medullary nerve centres some alteration of a molecular kind, or that disturbances occur in their vascular supply, leading up to an explosive climax analogous to that of urticaria, of migraine, or of epilepsy, after a series of peripheral irritations. These vary within the wide range of distribution of the vagus. Their treatment, whether operative or by other local measures, is only part of the cure. The nervous system requires general treatment, and drugs, among which iodide of potassium is the most serviceable, cannot alone bring about its complete renovation.

<sup>1</sup> Journ. Assoc. Mil. Surg. U. S., Carlisle, Pa., March, 1906; Journ. Amer. Med. Assoc., April 7, 1906, p. 1061.

<sup>2</sup> Soc. Méd. des Hôp., Paris, 1906.

<sup>3</sup> Medical Record, August 26, 1905



MECHANICAL DILATATION OF THE NOSTRILS has been suggested by H. Elliott-Blake<sup>1</sup> as a means of relief in cases associated with nasal narrowing or obstruction. He has for this purpose devised two nasal dilating blades, in the form of a speculum. Anyone, however, can try the value of this direct remedy for cases of nasal asthma, recurring asthma, nasal obstruction and for any analogous state, with the help of either the pull of the thumbs and the first fingers of the two hands on opposite sides, or the tips of two thin penholders, so as to make the *alæ nasi* stretch well apart.

THE MECHANICAL RELIEF OF THE DYSPNŒA OF SPASMODIC ASTHMA. Alexander Morison<sup>2</sup> describes a method which has enabled him to afford considerable alleviation to the respiratory distress experienced during the asthmatic paroxysm. This consists in applying a suitable degree of compression to the chest during the expiratory phase. The physician places the left hand on the back of the chest and the right on the pectoral region. As the chest rises with inspiration he raises the right hand, merely leaving the tips of the fingers on it, and when expiration should occur they are brought down with the whole hand on the chest and squeeze the air out, as one might water from a sponge. "Young subjects having greater elasticity of rib are those who most rapidly gain relief, but even in older people with stiffened chests compression by one hand over the thorax and the other over the epigastrium, lower ribs, or preferably over the right hypochondrio-epigastric region, procures relief from the thoracic anxiety attending preponderantly inspiratory fixation of the chest." The writer of this report has for many years practised this method as a routine of treatment in the various forms of dyspnœa where inadequacy of expiration leads to a progressive distention of the thorax and to a gradual diminution of the tidal ventilation of the lung. In emphysema I consider that its systematic use is the most elementary indication of treatment; whilst in states of exhaustion when the patient is too feeble to cough up the growing accumulation of mucus in the bronchial tubes and in the trachea its judicious application is the only means of averting fatal asphyxia. Although theoretical objections have been advanced by Harry Campbell against any interference with the permanent inspiratory overexpansion of the lung in dyspnœa, which he regards as compensatory, and as a remedy provided by nature, the clinical facts speak for themselves, and there can be no question as to the practical efficacy of skilfully applied "artificial expiration." Unfortunately there are cases in which the obstruction is situated so deeply in the bronchial tree, as for instance in the minute bronchioles of infants suffering from capillary bronchitis, that thoracic compression is ineffect-

<sup>1</sup> British Medical Journal, October 7, 1905, p. 908.

<sup>2</sup> Lancet, November 25, 1905.

ual and may, if persevered in, lead to rupture of the alveoli and to interstitial emphysema. The successes recorded by Morison would show that in the cases which he treated the obstacle was not of this extreme degree.

**Emphysema.** THE MECHANICAL TREATMENT OF EMPHYSEMA is a recurring subject in clinical literature. Its periodic revival shows that its principles have not entered into the practice of the profession, and that their description wears each time the aspect of novelty. Wolf's<sup>1</sup> treatment of this subject is eminently correct. The call for mechanical aid rests upon the factors of lessened elasticity of lung (normally equal to about 18 mm. Hg), weakness of the respiratory muscles, and fixation of the thorax. In health there is an expiratory pressure of 100 to 150 mm. of mercury, in emphysema only 50 to 80 mm. He calls attention to the following points: 1. The needful assistance to expiration may be limited to the latter as when it is applied by pressure with the hands, or by means of a special instrument, or by letting the patient breathe out into an artificially lowered atmospheric pressure. 2. Artificial respiration worked by hand or by apparatus gives inspiration and expiration. 3. Exercises have been used to increase the power of the muscles used in each phase. 4. An elastic shirt or corset may be worn to oppose inspiration without helping expiration. The author strongly recommends the last of these methods. He uses a vest composed of an elastic tissue exerting pressure upon the lower part of the chest; by means of buckles the pressure can be varied. The vest is worn day and night. By this means the chest is kept in the expiratory position in which the muscles of inspiration act at an advantage. It is unnecessary to enter into a discussion of these views which have often been expressed, beyond stating that this treatment seems to have been as successful in Wolf's hands as I have found it to be. As to the vest, it is indetical in construction with the *automatic respiratory jacket* which I exhibited before the Medical Society of London in the autumn of 1899,<sup>2</sup> together with E. Hulse Willock's ingenious rope-jacket respiratory apparatus. They were both mentioned in PROGRESSIVE MEDICINE, September, 1900, p. 37.

**Respiration.** THE MECHANISM OF CHEYNE-STOKES RESPIRATION. Having observed that under the influence of a supply of CO<sub>2</sub> gas the abnormal pauses disappear, Curlo<sup>3</sup> has set himself the task of explaining away an apparent contradiction. He does so by assuming that the CO<sub>2</sub> of normal breathing is a sufficient excitation for the respiratory centre; but that in depressed excitability of the latter (by poisons, etc.) it is no

<sup>1</sup> Wiener Klinik, April, 1905.

<sup>2</sup> British Medical Journal, November 4, 1899.

<sup>3</sup> Gazz. degli Osp., December 10, 1905.



longer sufficient to excite a reflex. The fact that external stimuli or internal ones (the will) may alter the respiratory rhythm does not impair the hypothesis that  $\text{CO}_2$  is the usual excitant of the respiratory act. From experiments made upon his patient Curlo did not find that oxygen had any appreciable action on the Cheyne-Stokes rhythm. Morphine and its congeners exaggerated the phenomena, whilst strychnine and similar drugs diminished them; vasodilators (caffeine, amyl nitrite, etc.) lessened them and even made them disappear in cases due to changes in the circulation.

PERIODIC RESPIRATION may be of two kinds according to Samuel West:<sup>1</sup> (a) "The Cheyne-Stokes type," and (b) "the grouped respirations."

The characters of Cheyne-Stokes breathing are: 1. Groups of respirations separated by long pauses. 2. The gradual crescendo and diminuendo of the respiratory movements. 3. The rapid rate of breathing which while it continues might be 120 in the minute.

The characters of grouped respirations are: 1. Groups of two, three, or four respirations. 2. Equal depth of individual respirations—that is, no crescendo or diminuendo. 3. Slow rate, not more than eight to ten in the minute. Grouped respirations are met with only in meningitis, especially in the posterior basic form, and disappear with the onset of recovery. The two forms of periodic respiration are, therefore, strongly contrasted, not only in character, but also in prognostic value. For, according to West, Cheyne-Stokes breathing may occur in central nervous affections, cerebral or bulbar, when the patient is moribund, but is most frequent and characteristic with a failing left ventricle when it is of fatal omen. The latter view is rather pessimistic. In the experience of doubtless many physicians, and certainly in my own, marked and persistent Cheyne-Stokes breathing may be recovered from, both in infancy and in old age, although at the best the symptom always wears a serious complexion. This reminds us of the excellent monograph by Camille Biot,<sup>2</sup> in which similar views are expressed.

PULMONARY VENTILATION AND PULMONARY INSUFFICIENCY is the title of a thoughtful study by G. Arthaud<sup>3</sup> which bears closely upon the clinical problems of dyspnoea in their pulmonary and cardiac aspects. Although we cannot enter upon the detail of his work its leading ideas may be of service. The pulmonary function has two lines of activity, the "mechanical" and the "chemical." The latter represents the results, which are capable of measurement in terms of  $\text{CO}_2$  excretion; the former

<sup>1</sup> Clinical Society, November 24, 1905; British Medical Journal, December 2, 1905.

<sup>2</sup> Etude clinique expérimentale sur la Respiration de Cheyne-Stokes; J. B. Baillière et Fils, Paris, 1878.

<sup>3</sup> Progrès Médicale, xxxiii., No. 51.

corresponds to the mechanical work and is named "ventilation" by Arthaud, who gives us the formula  $V = A \times N$  in which  $A$  is the amplitude of the respirations and  $N$  their number. He points out that  $A$  depends upon the efficiency of the lungs, but that  $N$  more immediately depends upon the efficiency of the heart; and the normal relation is well known to be one respiration to four pulsations. During exertion  $A$  and  $N$  rise concurrently. The effect of overexertion and dyspnoea is to disturb the relation in the direction of the weaker organ. Thus pulmonary insufficiency is declared when the rise in the value of  $A$  has found its limit. Arthaud applies these data to the estimation of the respiratory efficiency in various pathological states; and shows that this may be determined by a comparison of the value  $V$  with the amount of  $\text{CO}_2$  exhaled.

**The Mechanism of Expectoration.** E. Reichmann<sup>1</sup> has evolved an interesting theory to explain the remarkable efficiency of cough in raising from the depths of the lung the intensely viscid secretion clinging to the surface of the bronchioles. He believes that the great force at work is a suctional one, not as Aron had endeavored to make out, a *vis a tergo*. The sudden opening of the glottis, by affording an explosive escape of the gases compressed in the tubes, transforms the positive intrabronchial pressure into a suctional one; and this is also aided by the positive lateral pressure brought to bear upon bronchioles from without.

**The Physical Examination of the Chest and Physical Signs.** THE SOLID OR RIGID STETHOSCOPE is preferred by Mahillon<sup>2</sup> to the soft variety with India-rubber conducting tubes, and all practical clinicians will agree with him. It cannot be too strongly impressed upon the student that the matter is not one of choice, nor only of convenience. The pliable stethoscope is unreliable, even when fitted with the phonendoscope chest-piece. Mahillon thinks that the latter intensifies the sounds too much and modifies our perception of them, and that the same may apply to the ordinary chest-piece. My own objection to all stethoscopes with soft India-rubber tubes is the risk of absorption of the lighter vibrations of sound corresponding to some of the most important lesions, and in particular of the breath-like murmur of aortic regurgitation, and of the soft variety of tubular breathing. I insist upon a complete familiarity with the rigid stethoscope before the student proceeds to use the binaural.

REICHMANN'S ROD AUSCULTATION is again described by its author.<sup>3</sup> The little instrument illustrated in his paper enables him to map out not only the boundaries of the pulmonary apices, but even those of the pulmonary lobes. Abdominal tumors can be defined from the adjacent

<sup>1</sup> Zeitschrift f. klin. Medizin, 1905, p. 401.

<sup>2</sup> Journal Médicale de Bruxelles, 1905, No. 44.

<sup>3</sup> Fortschritte der Medizin, November 10, 1905.



liver or spleen, and it is easy to tell the dulness over the heart from that of fluid effusions into the pleuræ.

AN AUSCULTATORY PERCUSSION APPARATUS has been devised by M. Herz<sup>1</sup> to determine retrosternal dulness. It is in the shape of a small round cup fitted with air-tubes, and which plays the part of an amplified chest-piece. A percussion rod occupies the axis of the cup and comes into contact with the chest when the cup is applied to the surface. The junction of the two tubes of the binaural stethoscope is inserted into the cup at its side instead of axially. Percussion and auscultation are thus performed within a closed air space, and the percussion sound is perceived with greater intensity than when percussion is applied in the ordinary way outside the chest-piece.

THE TEACHING OF PERCUSSION. All must agree with the editorial remarks in the *Journal of the American Medical Association*, September 16, 1905, that "finger on finger" is the best percussion to learn. I would go further and submit that this is the percussion which must be learned if the student aims at true proficiency. His armamentarium is always with him, while hammer and pleximeter are constantly being left behind, lost, or broken. The sound yielded by the finger itself is less disturbing than that of the pleximeter. The sensations of touch and resistance felt by the finger percussed are often as important as the percussion sound, and they are missed when hammer and pleximeter are used. Finally, one can control the pressure of the finger against the surface to be percussed more easily than that of the pleximeter, and this is of importance in eliciting distinctions of percussion sound quite as much as the force of the blow of the percussing finger itself.

Equally sound is the advice as to the merits of "lightness of stroke" for the purpose of any fine percussion results. The secret of the art lies in this. We are not surprised then to get from such a veteran as Sir William Gairdner<sup>2</sup> the parting advice to minimize the percussion stroke for the delimitation of organs. "Deep percussion is necessarily inexact percussion." "Percuss so as to elicit the distinctions of sound depending on air-filled or non air-filled viscera when superficially placed in reference to the abdominal wall. Do not as a rule strengthen the stroke beyond what is absolutely necessary for this purpose."

A NOVEL AID TO DIAGNOSIS BY PERCUSSION. Rickman J. Godlee's<sup>3</sup> "high table," which is in reality a net firmly stretched on four posts connected at their base by a suitable framework on wheels, and sufficiently tall to allow the percussor to stand and move freely under the body of the patient, supplies a long needed want. It enables percussion

<sup>1</sup> Berliner klin. Wochenschrift, 1905, xlii. No. 36.

<sup>2</sup> Edinburgh Medical Journal, November, 1905, p. 408.

<sup>3</sup> Lancet, 1905, vol. i. p. 480.

to be conducted over dependent surfaces, and by its means Godlee has arrived at various conclusions which on the whole confirm facts previously known, but some of which have not been correctly stated in all books. For instance, we are aware that pleuritic and empyemal dulness do not shift with position except after a long interval. And Godlee finds that the dulness due to an empyema does not shift at all unless gas is present, and that a pleuritic dulness does not shift at all or very little. If dulness in the back shifts when a patient is placed on his face or upon the opposite side the cause of the dulness is subdiaphragmatic. This is an important addition to our means of localizing fluid at the base of the thorax to the cavity containing it. It is to be regretted that a substitute for this rather cumbersome piece of furniture is not likely to be easily found.

TRANSMITTED PERCUSSION, for the performance of which my lamented friend Dr. Roosevelt constructed for me many years ago a suitable "constant strength percussor," is another good method. R. von Velder,<sup>1</sup> who now describes it anew, does not adopt my own plan of utilizing an instrument and the patient himself to assist in the percussion, but trusts to finger percussion by an assistant working from the opposite side.

TRANSMANUAL AUSCULTATION AND ULNAR PALPATION described by D. Riesman<sup>2</sup> are both valuable and most practical methods. Ulnar palpation, which consists in laying the ulnar side of the hand in each interspace successively while the patient counts, gives accurate information as to the fremitus of contiguous interspaces and of corresponding areas on the two sides, and determines the upper level of an exudate. Transmanual auscultation is of special use in tracing difficult murmurs as the hand laid flat upon the pericardium works in sympathy with the ear.

THE PHONACOSCOPE. This is the name selected by Landolfi and Papale,<sup>3</sup> for their instrument for carrying out transpercussion of the thorax. In principle, and in the *modus operandi*, their method is practically identical with that just described, only the phonacoscope differs somewhat in shape and construction from my own "percuteur" and from that which was provided for me by Roosevelt. The physician may be able to dispense with a trained attendant, as the instrument is devised to strike with a uniform force, and can be worked by the patient. The inventors have found phonacoscopy a useful method especially in identifying changes in the density of the conducting media, in the differentiation of pleurisy and of pneumonia, and in the diagnosis of phthisis.

<sup>1</sup> Deutsch. med. Wochenschrift, xxi., No. 15.

<sup>2</sup> American Medicine, April 22, 1905.

<sup>3</sup> Riforma Medica, March 3, 1906.



### THE PERICARDIUM.

**Pericardial Effusion.** A MOBILITY OF THE PERICARDIAL EFFUSION has been occasionally noticed by J. Thomayer.<sup>1</sup> It is limited to a few cases, just as the "cormobile" is to be found in a small proportion (1.5 per cent. according to Leusser) of healthy people. In these cases the supine position may cause the dulness to disappear, and it will reappear with a return to the vertical posture.

**DOES THE HEART FLOAT IN PERICARDIAL FLUID?** The heart may be held in various positions by the operation of suitable forces, but there is one position only which it can assume by the force of gravitation, viz., the bottom of the pericardial fluid, as this fluid is of lower specific gravity than the heart, and even than the blood contained within it. The obviousness of this fact is so great that any statement to the contrary such as that by B. Schaposchnikoff<sup>2</sup> must be regarded as a lapsus calami or a verbal misunderstanding. The clinical fact to which he refers is the contact sometimes described between the anterior chest wall and the heart in spite of pericardial effusion. It is evident that this contact must sometimes occur as a result of an abnormally small sagittal thoracic diameter; but it is not alleged that it always does, nor that it necessarily must occur. When this does take place it is owing to some other cause. Skoda had long ago demonstrated that the heart does sink in pericardial fluid.

**PARACENTESIS PERICARDII.** H. Curschmann's<sup>3</sup> technique is by simple siphonage, through a tube charged with salt solution. The trocar and cannula are flat and lancet-shaped and provided with an efficient stop-cock. He introduces the trocar near the extreme left boundary of dulness; but in exceptional cases the right side may have to be selected, and "ribs" may have to be excised.

**PNEUMOCOCCUS PERICARDITIS.** The percentage of pericarditis in 665 cases of pneumonia studied by Chatard<sup>4</sup> was 4.66 per cent. and the mortality twenty-nine out of thirty-one cases, the pneumococcus being identified in nineteen after death and in two during life. Chatard argues from the decidedly greater frequency of the complication in right-sided pneumonia that the infection probably travels with the blood rather than through the tissues.

**An Interdependence between Basal Pericarditis and Aortic Endocarditis** is regarded by Luigi Ferrio<sup>5</sup> as a better explanation for the frequency

<sup>1</sup> Sbornik. klin., vii. 2; Sem. Méd., March 21, 1906.

<sup>2</sup> Revue de Médecine, October 10, 1905.

<sup>3</sup> Therapie der Gegenwart, xlvi., No. 9.

<sup>4</sup> Johns Hopkins Hospital Bulletin, October, 1905.

<sup>5</sup> Gazz. degli Osp., September 24, 1905.

of their association than the common view that they occur as a double event from the same general cause. He thinks that careful observation, as in his own five cases, will often confirm the evidence of an extension of the inflammation from endocardium to pericardium, and *vice versa*.

**Chronic Adhesive Pericarditis.** Loose adhesion by bands or fibres are practically impossible to diagnose. In G. D. Head's series of fifty-nine cases (including four of his own), in which universal adhesions existed, only five cases remained latent. The other cases presented the clinical features either of chronic cardiac disease or of Pick's pseudocirrhosis of the liver.

Increased cardiac dulness, systolic retraction of the chest wall, and absence of a visible or palpable beat were among the most common signs. Occasionally the loss of postural mobility of the cardiac dulness was noted, and the loss of the respiratory oscillations of the upper boundary of cardiac dulness was another important sign. Kussmaul's *pulsus paradoxus* was recorded in two cases only. The auscultatory abnormality noted in the heart sounds was most commonly that indicative of mitral disease. Indeed, pericardial adhesion itself has no distinctive auscultatory sign. The cases of pseudocirrhosis were peculiar in presenting no auscultatory signs.

A TYPICAL FATAL CASE OF ADHESIVE CALCIFYING MEDIASTINO-PERICARDITIS evolving, in a girl, aged thirteen years, within the short space of four to five months is reported by J. M. Bennion,<sup>1</sup> who refers to Gibson's interesting article in the *Practitioner*, February, 1903.

**Cardiolysis, or Brauer's Operation** for mediastino-pericardial adhesions (1902), which consists in removing the portions of the left precordial ribs (third or fourth, fifth and sixth) between the sternum and the anterior axillary line, has now been performed six times and successfully, according to Meyer Westfeld,<sup>2</sup> who contributes the record of a seventh case. The affection which tends, in progressive cases, to develop into that known as "Pick's disease" or "pseudocirrhosis of the liver" with relapsing ascites is revealed by definite symptoms: (1) systolic retraction of the ribs; (2) diastolic collapse of the distended cervical veins; (3) *pulsus paradoxus* (disappearance of pulse at the wrist at each deep inspiration). To what extent the operation may be of service depends in each case not only upon the nature, thickness, and extent of the adhesions over the more inaccessible surfaces of the heart, but largely too upon the degree of interstitial fibrosis of the heart wall due to the original carditis. At any rate the heart is relieved of part of its struggle by being freed from its anterior fixations. Westfeld's patient, a man, aged twenty-four years, with the cyanotic and subicteric aspect of cardiac

<sup>1</sup> British Medical Journal, February 10, 1906.

<sup>2</sup> Münchener med. Wochenschrift, October 3, 1905.



disease, and with ascites as well as anasarca, traced his trouble to two severe pneumonias with pleurisy the first six years back. The heart rate was 84 with powerful succussion, diastolic venous collapse, but no pulsus paradoxus. Loud systolic and presystolic murmurs were heard. As the ascites returned after tapping, and the other symptoms were mitigated only by rest, digitalis, and theocin, Brauer's operation was performed. Convalescence was rather slow, but the major signs of cardiac inadequacy disappeared within thirteen weeks, and the patient is stated to have eventually felt equal to light work. Diastolic projection and systolic retraction of the precordium remained, but no murmur was audible.

A successful case of cardiolysis is reported by F. Umber<sup>1</sup> in which the operation was performed after the symptoms of loss of compensation had been allayed by rest in bed and cardiac treatment, and evidence had been obtained that the heart itself was free from structural lesions. The immediate effect of releasing the heart from its bony attachments was a perceptible increase in the strength of the pulse. The after-results were equally satisfactory. During the six months that had elapsed since the operation there had been no return of the failure of compensation and the patient had remained free from any major cardiac troubles. This was the third case operated on by Umber. Beck has also treated three cases by operation.

G. Treupel's<sup>2</sup> case was that of a man, aged twenty-nine years, whose first rheumatic attack occurred when he was seventeen. There was evidence of pericardial adhesions with considerable hypertrophy in addition to a systolic and diastolic murmur. Compensation was not broken although the patient suffered from a good deal of oppression and dyspnoea. Pieces 7 cm. in length were removed from the fourth and fifth cartilages at their sternal attachment, and considerable relief of the symptoms was secured.

## THE HEART.

**Percussion of the Heart.** Goldscheider<sup>3</sup> uses the lightest possible stroke, as practised by Turban and many others. Among various other excellent suggestions he recommends to percuss during deep inspirations in order to define more accurately the lower lateral heart borders, which in deep expiration are partly buried in the diaphragm. On the other hand the prevascular area is best determined during deep expiration.

<sup>1</sup> Therapie der Gegenwart, January, 1905.

<sup>2</sup> Münchener med. Wochenschrift, October 10, 1905, lii., No. 47.

<sup>3</sup> Deutsch. med. Wochenschrift, 1905, Nos. 9 and 10.

GOLDSCHIEDER'S "SCHWELLENWERT" OR ORTHOPERCUSSION METHOD for the accurate delimitation of the heart, has been submitted to a rather severe test by H. Curschmann and Schlager,<sup>1</sup> and has stood it well. This consisted in one of these observers surface-marking the percussion outline of the heart according to Goldscheider's method, and in the other observer obtaining the orthodiagraphic outline likewise in the dorsal decubitus. Although conducted independently these two methods gave almost identical results.

The capabilities of skilled percussion are no new revelation to some of us, and we have been accustomed for a score of years to work with these true cardiac outlines, the life-like resemblance of which to the shape of the heart seems to excite so much enthusiasm on the part of recent writers. It is gratifying to note these signs of a growing appreciation of long neglected opportunities.

THE INFLUENCE OF POSTURE UPON THE SOUNDS OF THE HEART is undeniable and can be readily identified by varying the position of the patient during auscultation. We owe to William Gordon,<sup>2</sup> of Exeter, an analysis of some of the chief factors in the alteration which is manifested, and particularly of those which belong to the varying relations between valve and superincumbent weight of blood. As regards the first sound, in the supine position there is according to him a more direct pressure upon the mitral valve and upon the tricuspid than in the erect. But in the case of the second sound the difference is more readily perceived, only it occurs in the opposite direction: the semilunar valves have to support a vertical column of blood in the erect attitude, and are relieved of its weight during decumbency. We are prepared to find that the second sound in the latter posture is decidedly sharper, and that the first sound is rather duller than when the subject is reclining. Other factors doubtless help to modify the sounds. But these fundamental differences are important to remember, as the same influences must be at work in the case of the valvular murmurs, some of which are greatly modified by varying posture, even to the extent of complete extinction, as in some functional systolic murmurs.

Another important result of changing the attitude is traceable by percussion in the size and configuration of the cardiac dulness. The tendency of the heart is to drop in the erect posture and to become more vertical, whilst decumbency would have the opposite effect; and at the same time the contact between its anterior surface and the chest wall is less intimate. These well-known facts have been definitely tested by Gordon. He finds that in the standing position the upper boundary of cardiac dulness is perceptibly lowered, and that in the supine posture

<sup>1</sup> Deutsch. med. Wochenschrift, 1905, Nos. 50 and 51

<sup>2</sup> British Medical Journal, November 18, 1905.



the right and the left borders move outward to the extent of three-quarters of an inch and of one-third of an inch respectively. These changes tell of considerable alterations in the tension of the vessels as well as of the heart; and this must be to a certain extent reflected in the character of the sounds.

**Heart Murmurs.** MUSICAL MURMURS. M. Landolfi<sup>1</sup> reminds us that these murmurs had been noted by Laennec, and in 1883 specially described by Capozzi. It is doubtful, however, whether as contended by the latter that they will ever afford us a reliable means of identifying the variety of the lesion.

A NEW EXPLANATION OF THE REDUPLICATION OF THE SECOND SOUND IN MITRAL STENOSIS as being due to a diastolic flapping of the mitral valve is argued at some length by L. Gallavardin.<sup>2</sup> He believes that the violent disturbance set up at the aortic region at the moment of systolic closure shakes the large mitral cusp and causes it to flap immediately after the closure. The individual differences in this murmur and its frequent absence might be thus easily explained.

AORTIC REGURGITATION is not limited, according to M. Couto,<sup>3</sup> to the diastolic period, but also occurs through the leaky aortic valves during the early part of their closure. In most cases, therefore, we may hear a presystolic murmur as well as a diastolic one.

AORTIC VALVULAR STENOSIS of the calcified and fused variety has twice been found by M. F. Leclerc<sup>4</sup> to give rise to a maximum of the systolic bruit to the left instead of the right of the sternum. In neither of these cases was there any aortic dilatation.

In relation to valvular disease I can only refer to some of the papers which have been published, none of them apparently containing any great addition to our knowledge, such as "The Normal and Pathological Histology of the Aortic and Mitral Valves," by John Homans and J. Burrage;<sup>5</sup> "The Pathological and Clinical Aspects of Mitral Stenosis," by Crawford<sup>6</sup> and by F. P. Henry;<sup>7</sup> and "Combined Aortic and Mitral Disease," by F. J. Poynton.<sup>8</sup>

THE ANTENATAL DIAGNOSIS OF A FETAL HEART MURMUR is not an absolute novelty, inasmuch as Ballantyne,<sup>9</sup> in his *Manual of Antenatal Pathology*, records eight instances. J. McCrae narrates the case of an infant whose murmur was plainly audible during its intrauterine

<sup>1</sup> *Riforma Medica*, September 30, 1905.

<sup>2</sup> *Lyon Médical*, September 10, 1905.

<sup>3</sup> *Semaine Médicale*, xxvi., No. 3.

<sup>4</sup> *Lyon Medical*, December 17, 1905.

<sup>5</sup> *Journal of the American Medical Association*, June 17, 1905.

<sup>6</sup> *The Practitioner*, June, 1905.

<sup>7</sup> *American Medicine*, May 20, 1905.

<sup>8</sup> *British Medical Journal*, October 7, 1905.

<sup>9</sup> *Journal of Anatomy and Physiology*, 1902, vol. i. p. 372; 1904, vol. ii. p. 509; October, 1905, vol. xi. p. 28.

life and who survived forty-nine days in spite of cyanosis due to transposition of all the viscera except the gall-bladder.

**Congenital Heart Disease.** TRANSPOSITION OF THE AORTA AND PULMONARY ARTERY. Kauffmann<sup>1</sup> reports the case of a boy, between his eighth and eleventh year, with debility, puny development, and deep cyanosis, but satisfactory mental capacity, and who died of middle ear suppuration into the brain. The heart and circulation presented extraordinary abnormalities: a widely open foramen ovale, and the aorta rising from the left ventricle. All the valves were healthy, and the myocardium showed no degenerative change. The two venæ cavæ entered the right auricle in the normal manner, and the pulmonary veins entered the left auricle. The ductus arteriosus was easily recognizable as a thick fibrous cord, but was not patent. All the vessels were well-developed and healthy. The circulation must have been carried on by means of two currents of blood, both passing through the foramen ovale—one from the right into the left auricle, and the other from the left into the right auricle. In no other manner could the circulation be explained, for, since the right auricle received all the systemic venous blood and the right ventricle discharged entirely into the aorta, this trunk could have received only venous blood, and the latter could never have become aërated unless it had, at least partly, passed from the right into the left auricle, in the fetal manner. On the other hand, since all the blood from the lungs entered the left auricle, and the left ventricle discharged only into the pulmonary artery, the aërated blood must have got across into the right auricle, at least in part, in order to reach the right ventricle, and thus the aorta. The murmur could be ascribed to the crossing of currents in the foramen ovale. The right ventricle resembled in thickness of walls the normal left ventricle, but in internal arrangement it had the characters normally possessed by the right ventricle. The left one was a little thicker walled than a normal right ventricle. The defect in development was clearly limited to a deficient rotation of the septum, which, growing downward from the interval between the left fourth and fifth branchial vascular arches, separates the primarily common arterial trunk into the aorta and pulmonary artery. A half-turn less than normal in this position would throw the pulmonary artery into the left ventricle and the aorta into the right, as had happened in this case.

During life the cyanosis had varied in intensity with the slightest causes of disturbance. The heart had shown no enlargement, its action had been regular, moderately frequent—70 to 80—and a loud, rough systolic murmur had been present all over the precordium, but most intense at the third left costal cartilage. In this spot it had a churning

<sup>1</sup> British Medical Journal, April 14, 1906, p. 861.



character, and completely shut out the normal first sound. Elsewhere, over the heart, the first sound had still been audible at the commencement of the murmur. The second sound had everywhere been pure and of normal intensity. In three years the cardiac symptoms and signs had undergone no change.

The case has been given in detail as it is instructive, and constitutes a record in the pathological and clinical annals of the affection for which Kauffmann is much to be thanked.

A. G. Ellis<sup>1</sup> has also reported a case of transposition of the aorta and pulmonary artery in which the foramen ovale and the ductus arteriosus were both patent. But he draws the conclusion that this anomaly is incompatible with more than a short period of existence. Peacock could only find five cases surviving for more than a year, and only nine for more than six months.

**Constitutional Heart Debility** is a good clinical term which expresses much, and many things, without attempting any strict definition of the various conditions to which it may apply. F. Kraus,<sup>2</sup> who has taken it as his theme, does not fail to recognize that some structural inferiority usually underlies imperfections in function, although in cardiac matters the relation is not always one of obvious parallelism. He places before us the special form of debility which he connects with the "narrow chest" type of conformation. This type is characterized by an excessive activity of growth during the period of sagittal costal elongation (Hueter), and by an excessive longitudinal "axial" growth downward from the first and particularly from the twelfth dorsal vertebra. This is accompanied by corresponding visceral peculiarities and by a somewhat dependent state of the organs. The heart is not only inclined to be vertical, but according to Kraus it is too small; at any rate it is not, so far as he can judge, fairly proportioned to the size of other parts. Though somewhat abstruse these considerations may prove of practical interest in contrast with the effect upon the heart of the narrowed chest of disease, which is not a constitutional but an acquired peculiarity and which is best illustrated in the extreme form of rickety "pigeon breast."

**The Diagnosis of Fatty Heart** is a matter of the first importance, but of considerable difficulty, if by diagnosis we understand an opinion strictly capable of demonstration. The responsibility of any mistake in connection with a disease which is inevitably fatal is perhaps greater when the patient is wrongly credited with its possession than when this is overlooked. It is well, therefore, that we may at least have some negative signs, if we cannot rely upon positive ones. As there are no murmurs, the pulse is naturally consulted for indications; but absolute evidence is

<sup>1</sup> American Journal of Obstetrics, December, 1905.

<sup>2</sup> Medizinische Klinik, 1905, No. 50.

not to be got from its state, except that which is of a negative order. As pointed out by Sir William Broadbent,<sup>1</sup> "a sustained pulse at once negatives advanced fatty degeneration." The evidence yielded by the heart sounds is likewise ambiguous except when their loudness negatives the condition. Relative distance from the ear, thick parietes, intervening fluid or tissue, and particularly lung tissue, will effectually mask a good second sound, which sometimes then may be best heard in the neck. The first sound may likewise be partly extinguished. Greater significance attaches to the shortening of the interval between the first and the second sound, the ventricle "not going through" with its systole, though this too is just as much a constant result of mere heart fatigue or asthenia. Slowness of the pulse, though a specially common symptom, cannot be strictly identified with the affection. No physical signs whatever are obtainable from palpation and percussion of the cardiac area. We are, practically speaking, left without a single positively identifying mark. And yet the diagnosis has to be made, and is often enough made from the general clinical aspect of the case, and from the aspect of the patient, which taken together seldom deceive the experienced physician.

**Myocarditis.** MYOCARDITIS FOLLOWING INFECTIOUS DISEASES is regarded by Höhne,<sup>2</sup> in agreement with von Krehl's recent utterances, as being just like any other acute affection of the heart, part of a general inflammation involving all the layers and coverings of the organ. The prognosis is favorable if the patient can be rested in bed for four weeks. The best treatment for infective myocarditis was in his hands sulphate of strychnine subcutaneously.

**DIFFUSE MYOCARDITIS.** The two cases reported by S. Saltykow<sup>3</sup> belong to the unusual primary or isolated form. He believes that this is practically identical with the condition known to occur after infective disorders. The muscular elements may take a part in the cellular proliferation by the production of myogenic cells; and this may occur in the subacute as well as in the acute cases. The distinction between interstitial and parenchymatous myocarditis is, therefore, ill-founded. The same author calls attention to another important distinction. A good deal of the "fibrous myocarditis," which has been described, is not myocarditis, but the final scar-like product of ancient infarcts which had resulted from past disturbances of the myocardial circulation. In my experience they are generally connected with arterial disease in the coronary system. All these cases, and they are not uncommon, as a result of atheroma and syphilis, should be carefully eliminated from the group of genuine "diffuse myocarditis."

<sup>1</sup> Angina Pectoris and Pseudoangina, *Lancet*, May 27, 1905

<sup>2</sup> *Deutsch. Militäraerzts. Zeitsch.*, Heft 10, 1905.

<sup>3</sup> *Virchow's Archiv*, Band clxxxii. p. 1.



**Gonorrhœal Endocarditis and Gonorrhœal Septicæmia** are dealt with by W. S. Thayer<sup>1</sup> with much thoroughness. He points out that endocarditis is not an infrequent sequel of an acute urethritis, the nature of which may be purely gonococcal, or which may have undergone a mixed infection, and may give rise to varied forms of valvular infection.

**The Pyrexia of Chronic Endocarditis.** Among the conclusions which J. S. Thacker<sup>2</sup> derives from his study of this subject a few may be specially noted. Often present and unexplained by any obvious complication, it can at least be said that neither the presence nor degree of fever follows strictly the variety or degree of endocardial lesion. Again, the fatality or the improvement and eventual recovery of cases is equally unaccountable. The line of demarcation which distinguishes malignant endocarditis from other forms is not distinct. Lastly, the rheumatic febrile cases of chronic endocarditis are as favorable as the afebrile, or even more favorable.

Nathan Raw<sup>3</sup> is a believer in the value of polyvalent *antistreptococcus serum* in pure streptococcal infections. Although it is only an antimicrobial serum and has no antitoxic action, he speaks well of the treatment of malignant endocarditis by the rectal administration of antistreptococcus serum, and is able to record a recovery in two cases.

**Dilatation of the Heart.** DILATATION AND LOSS OF FUNCTION OF THE AURICLES. The interesting feature in G. Müller's<sup>4</sup> communication is not only the extraordinary capacity of the left auricle (2,500 c.c.), but the opinion which he expounds and argues at great length, that its causation was mainly due to myocarditis (a conclusion partly based upon Samuelson's finding that closure of the left coronary artery gives rise to extreme dilatation of the left auricle), as he discovered partial atheromatous obliteration of some of the left coronary branches. The heart, before emptying, weighed 4,900 grams (135 ounces); after emptying, 700 grams (22 ounces). Thus seven pints of blood were in the heart, chiefly in the left auricle. The left ventricle was free from enlargement, although slightly fibrosed as well as the right ventricle, which was dilated.

The fibrosis of the right auricle was less extreme than that of the left auricle, where no trace of muscular fibre could be found, and its dilatation was of much less degree (as large as a fist). The valvular defects were incompetence and stenosis of the mitral valve, the orifice of which admitted one finger, and incompetence of the tricuspid valve, which admitted three fingers.

Clinically there was much analogy between this case and those de-

<sup>1</sup> American Journal of the Medical Sciences, November, 1905.

<sup>2</sup> Ibid., January, 1906.

<sup>3</sup> Lancet, April 21, 1906.

<sup>4</sup> Zeitsch. f. klin. Medizin, Band lvi., Heft 5 and 6, p. 520; Med. Rev. of Rev., September, 1905, p. 469.

scribed by Sir Isambard Owens, W. T. Fenton<sup>1</sup> and myself.<sup>2</sup> Intermittent cardiac symptoms of long-standing, with intervals of relative efficiency, absence of dropsy, a strong, regular pulse, and a high blood pressure (about 180 mm. of mercury) were favorable features ascribed by Müller to an efficient diastolic ventricular suction, and to the compensatory hypertrophy of the right ventricle.

The patient, a bricklayer, aged thirty-nine years, had first experienced palpitation in 1889, with periodical attacks of cardiac pain, but did not give up work until January, 1895, when he was first admitted into the hospital, with subsequent re-admission, and after 1898 almost constant residence there. He died on September 24, 1903. Originally there had been a presystolic murmur (January, 1895), but in 1902 this had made way for a purely diastolic murmur, coupled with a loud systolic murmur. The dulness was extensive, with palpable systolic thrill, and the apex beat was to be felt in the left posterior axillary line.

The slight malleolar œdema increased to anasarca in September, 1903, three weeks before his death, which resulted with the usual symptoms of ascites, albuminuria, dyspnœa, cyanosis, and cardiac irregularity and failure. A satisfactory explanation is still needed for the pathology and for the remarkable clinical behavior of these cases.

ACUTE DILATATION OF THE HEART. H. Starck<sup>3</sup> can vouch for the genuine acute occurrence of great dilatation, in a student, aged twenty years, as a result of a series of severe athletic exertions. The onset of dilatation was accompanied by severe cardiac pain and high frequency of pulse. The greatly increased area of dulness extended chiefly to the left. The dilatation yielded after eight hours' rest, and a week later the cardiac pain and irregularity had completely disappeared.

THE MECHANISM OF CARDIAC DILATATION is believed by James Mackenzie<sup>4</sup> to consist in loss of muscular tone rather than in a thinning or overstretching of the heart wall. He is also of opinion that this depression of the function of tonicity may be limited to the fibres forming the auriculoventricular ring; and that this would best explain the production of functional murmurs so often found in hearts which are not dilated as a whole.

THE PRESSURE OF AN ENLARGED HEART UPON NERVES has been credited with important clinical results. Indeed, Kingscote, of London, has based his theory of asthma upon an alleged compression, by a distended or dilated heart, of the pulmonary plexus of the vagus. Significance, therefore, attaches to H. Frischhauer's<sup>5</sup> anatomical verification

<sup>1</sup> Clinical Society's Transactions, May 24, 1901.

<sup>2</sup> Ibid., May 9, 1902.

<sup>3</sup> Münchener med. Wochenschrift, 1905, No. 7.

<sup>4</sup> British Medical Journal, December 30, 1905.

<sup>5</sup> Wiener klin. Wochenschrift, 1905, No. 52.



of actual compression of the recurrent laryngeal nerve in a female subject, aged thirty years, who had had complete paralysis of the left vocal cord. The nerve at its bend was flattened and degenerated, and there was considerable enlargement of the left auricle from mitral stenosis. He makes out three varieties of compression to which this nerve is liable: (1) direct pressure as in aneurysm, (2) lateral pressure or stretching by the ductus botalli, (3) indirect or conveyed pressure, as in his own clinical case, where the pressure from the enlarged heart and auricle was transmitted through the pulmonary artery and applied to the nerve backed by the unyielding surface of the aortic arch.

As to the mechanisms immediately concerned in the failure of compensation C. Gennari<sup>1</sup> has not been able to satisfy himself that the "myofibrosis cordis," viz., a more or less abundant deposit of connective tissue between the muscular fibres, described by Dehio and by Krehl, but not found invariably by other pathologists, is an indispensable structural concomitant of the loss of function.

**The Influence of Pleural Effusion in Causing Asystolism** in the course of heart disease is a practical point well worth the attention bestowed upon it by M. E. Tauber,<sup>2</sup> as it opens our eyes to the danger of delaying paracentesis. Tauber points out that effusion interferes considerably with thoracic aspiration and, therefore, with the pulmonary circulation, but in no small degree with the systemic circulation also.

**Hydatids of the Heart.** We owe to J. Bland-Sutton<sup>3</sup> an instructive contribution to the study of *echinococcus* colonies in the heart, with especial reference to the preference of the parasite for areolar tissue.

The affection does not appear to be so rare as generally supposed, judging from the cases reported in medical literature and from the specimens contained in the London Museums.

In the majority of instances the parasite lodges in the loose tissue of the auriculoventricular septum, as shown in this illustration from a boy, aged nineteen years, who died in Guy's Hospital, with extreme suffering and the ordinary symptoms of mitral imperfection. Not infrequently there may be no symptoms until the tumor bursts into one of the cavities of the heart. It may then set up, as in Budd's<sup>4</sup> case, fatal embolism of the lung.

C. G. Grulee<sup>5</sup> has also put on record a case of apparently primary *echinococcus* disease of the heart, with secondary invasion of the lung.

**Functional Disorders of the Heart.** THE EFFECT OF GENERAL MUSCULAR WORK UPON THE HEART has been clearly made out by the experi-

<sup>1</sup> Archiv. per le Sci. Méd., December, 1905.

<sup>2</sup> Inaugural Dissertation, Bucharest, 1905.

<sup>3</sup> Clinical Journal, November 22, 1905.

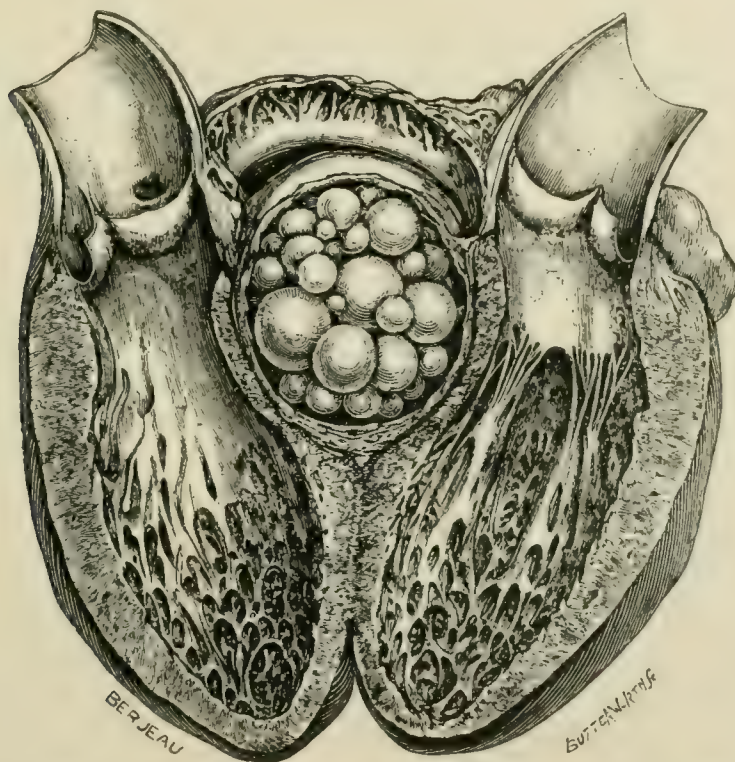
<sup>4</sup> Pathological Society Transactions, vol. x. p. 80.

<sup>5</sup> Surgery, Gynecology, and Obstetrics, Chicago, October, 1905.

ments of Kulbs, of Kiel,<sup>1</sup> the remarkable results of which are fraught with important inferences. Two dogs of the same size and breed were placed under identical conditions, save that one had to do a large amount of muscular work every day. The working dog weighed 15,200 grams (41 pounds), the control animal 15,000 grams (40 pounds). The heart of the former weighed 152 grams (5 ounces), of the latter 99 grams (3½ ounces) only.

FUNCTIONAL HEART-TESTING by quick stair-work is the subject of a report by A. Selig.<sup>2</sup> In Krehl's klinik one hundred subjects were

FIG. 1



The left ventricle of a heart opened vertically to expose an echinococcus colony growing in the loose tissue of the auriculoventricular septum on the posterior aspect of the heart. (Museum of the Middlesex Hospital.)

examined. The healthy subjects yielded an average acceleration of twenty-three beats per minute and an average rise of 8 mm. of blood pressure. With one exception the heart showed no enlargement. Among cardiac subjects it was again proved that those with valvular lesions might stand considerable bodily exertion, whilst those suffering from muscular affections of the heart showed signs of inadequacy after ascending a few steps. On the other hand healthy youths presented after a football match 0.5 per cent. albumin and abundant casts in the urine; and their blood pressure had sunk by 20 to 40 mm. together with

<sup>1</sup> Munich Congress for Int. Med., April, 1906; British Medical Journal, May 5, 1906.

<sup>2</sup> Präger med. Wochenschrift, 1905.



the occurrence of displacement of the heart-beat. Muscular exertion also lowered blood pressure in two patients with chronic kidney disease.

HEART ESTIMATIONS. The so-called "true size" of the heart is not, W. Guttman<sup>1</sup> finds, to be made out by Röntgen rays with any absolute precision. This is perhaps no great loss, as the most important is to determine the variations in shape and in strength of the heart by heart tests. On the other hand, P. C. Franze,<sup>2</sup> who makes a study of these functional estimations of power, believes the rays to be the only means of determining the size with mathematical accuracy. An instrument such as L. Forstetter's *sphygmocardioscope*,<sup>3</sup> capable of registering the state of the several functions, might perhaps supply a more reliable basis for gauging cardiac efficiency.

PARALLEL VARIATIONS IN THE SIZE OF THE PULSE AND IN THAT OF THE HEART had been previously described by M. Heitler, the rule being that any change in the volume of the heart is reflected with due proportion in the pulse. In a recent paper<sup>4</sup> he proceeds to show that as the volume of the heart is capable of being modified under certain influences the means are placed within our hands of altering the size of the pulse. To increase it we need only apply strong percussion or friction to the surface of the cardiac or hepatic regions, or transient mechanical stimulation to other parts of the body: whereas intense and continued pressure over the same regions, or continued and energetic stimulation of other parts will reduce the size of the pulse. It is interesting to note that in most subjects closure of the eyes contracts the pulse, opening them dilates it. Heitler's observations on the pulse have been confirmed radiographically in connection with the variations in size of the heart.

FACTITIOUS VAGUS INHIBITION of a less dangerous kind than that by direct compression is obtained by Abrams<sup>5</sup> by a slow and forcible retraction of the head by the patient. This method has given him remarkable assistance in differentiating murmurs. It is also the means of diagnosing asthma (by the tracheal traction test) even during the intervals between attacks, the manubrium sterni not becoming dull in the asthmatic, as it does in the normal subject. He has also utilized it in association with the "stomach-reflex" to determine the motor power of the stomach, as well as its lower border.

SOME OF THE PHASES OF THE NEUROTIC HEART are discussed by R. Robinson.<sup>6</sup> Their etiological variety is reflected in their treatment. Digitalis is found to be inoperative in the neurotic heart whilst strophanthus is decidedly active. But the preparations of coca give the most

<sup>1</sup> Ztsch. f. klin. Medizin, lviii., Nos. 5 und 6.

<sup>2</sup> Ibid.

<sup>3</sup> Edinburgh Medical Journal, March, 1906.

<sup>4</sup> Berliner klin. Wochenschrift, March 5, 1906.

<sup>5</sup> American Medicine, September 30, 1905.

<sup>6</sup> American Journal of the Medical Sciences, June, 1905.

satisfactory results; and massage and gymnastic exercises are of much value, though the Nauheim treatment needs careful supervision.

THE OCCASIONAL HEART ATTACK DUE TO EXTREME FLATULENT DISTENTION, as in H. Statham's<sup>1</sup> patient, may arise quite suddenly with epigastric oppression, a general malaise, profuse sweating, and a small and rapid pulse from 120 to 150. It may last twelve hours or more and cease suddenly. Drugs or applications are unavailing, but massage and kneading may terminate the attack in a few minutes by dispelling the paralytic gaseous accumulation.

ÆROPHAGIA is in such direct contrast with the respiratory uses of air, and is capable of so important an influence upon the cardiac as well as the pulmonary function that we should not overlook the practical conclusions of C. D. Spivak:<sup>2</sup> (1) Swallowing of air in small quantities is a normal phenomenon. (2) Abnormal swallowing of air may be voluntary (hysteria) and involuntary (dyspepsia, idiopathic). (3) Air may enter the stomach by swallowing, aspiration, or gulping. (4) Ærophagia is not so rare as the earlier writers used to think. (5) Although perhaps trivial at the beginning it is, as a rule, a sequel to some other affection, and may, in its turn, undermine the health. (6) Ærophagia, tympanites, nervous eructation, pneumatosis, and merycism have an etiological relationship. (7) The best treatment in voluntary ærophagia is to impress patients with the fact that they can stop it if they will and that otherwise "they have sown the wind, and they shall reap the whirlwind."

**Arhythmia.** THE AURICULAR PULSE AND AURICULAR PULSE-TRACINGS. For those wishing the latest literature on this subject important contributions are accessible in the *Zeitschrift f. Experimentelle Pathologie und Therapie*, vol. i. p. 26, 43, and 57. The first of them, by H. E. Hering, deals with the results of experimental and of clinical investigations on the auricular venous pulse in extrasystole. Rihl's paper has for its title "An Experimental Analysis in Mammalia of the Irregularities of the Venous Pulse Induced by Extrasystoles." In the third paper Pan deals with the behavior of the venous pulse in the arhythmia due to extrasystoles in man.

*The Production of a Positive Jugular Wave of Regurgitation* has repeatedly been observed by von Leube<sup>3</sup> in cases of simple anæmia. This regurgitation is reinforced by pressure upon the liver or inferior vena cava, but is not manifested by any of the usual cyanotic or auscultatory signs of tricuspid insufficiency, though it may be and often is accompanied by a murmur due to mitral incompetence. In the opinion of von Leube both these events are due to the same functional myo-

<sup>1</sup> Lancet, February 24, 1906.

<sup>2</sup> Medical Record, April 29, 1905.

<sup>3</sup> Zeitschrift f. klin. Medizin, 1905, No. 57.



cardial debility from anæmia, and he relies for the correctness of this view upon the fact that they both disappear under appropriate treatment.

For the Study of Accessory and Reduplicated Heart Sounds there is much point in W. P. Obrastzow's<sup>1</sup> recommendation of "immediate" heart auscultation.

*First-sound Reduplications* are best listened for in the parasternal area of the third or fourth left intercostal space. Not uncommon in the apparently healthy, and apparently not essentially differing in kind from those known pathologically as "systolic cantering rhythm," the reduplications consist of an added "fore-tone," which C. Gerhart regards as *auriculosystolic*; they are sometimes audible only in the supine posture. They are specially common in chlorosis and neurasthenia as the sign of a first degree of cardiac inadequacy. The "*diastolic cantering rhythm*" may also be found in some apparently healthy individuals, particularly the neurasthenic, but is essentially pathological and is produced by a rapid influx into a yielding ventricle. It is absolutely distinct from the *true second sound reduplication* heard in mitral stenosis. There is also a *true first sound reduplication* sometimes heard as a result of a systolic jerking of the arterial wall.

*True Double Apex-beat.* Doll<sup>2</sup> refers to cases in which the condition was only temporary, and gives a full account of a fatal case in a youth, aged sixteen years, in whom after death there were found dilatation of both ventricles and some myocardial fibrous changes which may have encroached upon the auriculoventricular boundary and thus led to bigemination.

A rare case of double apex-beat is narrated by O. F. Helsingius.<sup>3</sup> The two beats occurred in rapid succession, the first being weaker than the second. It was found at the autopsy that both ventricles entered into the formation of the heart's apex, but at the extremity of the right ventricle the myocardium was exceedingly thin and almost completely replaced by loose fat. It seemed probable that the first and weaker beat had been due to a sudden systolic "passive" distention of this almost aneurysmal right apex; the other beat the genuine "active" left ventricular apex-systole following immediately.

T. Fisher's<sup>4</sup> case of "curious cardiac action" also presented two apex beats, one of which was felt nearer the sternum than the other which occupied the normal site. As neither the cardiogram nor the arterial tracing presented any extrasystoles Fisher concluded that this was an instance of want of synchronism between the two ventricles, and that

<sup>1</sup> Zeitschrift f. klin. Medizin, Band lvii. p. 70.

<sup>2</sup> Berliner klin. Wochenschrift, 1905, No. 46.

<sup>3</sup> Fortschritte der Medizin, 1905, No. 15.

<sup>4</sup> Medical Chronicle, July, 1905.

the first of the two beats, which was accompanied by a murmur, was the left ventricular beat whilst the second weaker beat must have been that of the right ventricle. There was also a diastolic murmur, and, at the base, a reduplication of the second sound. After three days the double beat disappeared, and the young woman developed the ordinary signs of mitral stenosis and incompetence.

**Heart-block and Stokes-Adams Affection.** The event of the year in cardiac pathology has been the definite identification of the causal association between the Stokes-Adams symptoms, or "syndrome," as they would say at Athens, and the paralysis or block of the muscular bundle of His, which constitutes the so-called "Gaskell's bridge." Henceforth neither the anatomy nor the physiology of this diminutive structure can be excluded from the repertoire of clinical themes.

1. *The Anatomy of the Bundle.* His, Jr., described in 1893 a narrow band of fibres, 18 mm. long, 2.5 mm. wide, and 1.5 mm. thick, running from the right auricle and its valves to the interventricular septum. It is exceedingly difficult to find, and we are, therefore, indebted to A. Keith for his lucid anatomical statement.

2. *The Physiology of the Bundle.* This has been worked at for years by many in addition to Gaskell and His. The latest experimental work is that of Erlanger,<sup>1</sup> who by his graduated clamping method is able to produce in the dog any degree of heart-block, viz.: (a) intersystolic delay, (b) systolic intermittence of the ventricle, (c) systolic dissociation of auricle and ventricle. With each change of rhythm the blood pressure was much affected, falling with the fall of ventricular rate and rising with its increase. But even in complete block a fair pressure might be maintained. With partial block both auricle and ventricle might be inhibited by stimulation of the vagus as easily as under normal conditions. But when the block was complete no diminution or only slight diminution of the rate of the ventricle resulted from stimulation of the vagus. The auricles reacted normally to vagus stimulation. Section of both vagi had little or no influence on the rate of the ventricular beat when the block was complete. But stimulation of the accelerator nerve usually increased the rate of the ventricle. The reaction of the auricles to stimulation of the accelerator nerve was not influenced by the block.

3. *The Clinical Pathology of the Bundle.* The fortunes of so frail a structure must indeed be precarious, and it seems hard to realize that human life should continue to hang upon them sometimes for more than a hundred years. Alfred Stengel's case<sup>2</sup> will remain historical

<sup>1</sup> Johns Hopkins Hospital Bulletin, June, 1905; Journal of Experimental Medicine, November 25, 1905, vol. viii., 8; Lancet, July 27, 1905.

<sup>2</sup> American Journal of the Medical Sciences, December, 1905, p. 1083.



as having as it were demonstrated the mechanism "in action." It is the first of a small series which will probably soon expand. For instance, at the Leeds Medico-Chirurgical Society, Otto F. F. Grünbaum<sup>1</sup> exhibited a heart with a gumma of the interventricular septum in which the band of His was involved.

E. O. Jellick, C. M. Cooper, and William Ophuls,<sup>2</sup> of San Francisco, have put on record a case of acute epididymitis, probably gonorrhœal in origin, leading to septicæmic symptoms, in the course of which the Stokes-Adams syndrome appeared fourteen days before death. Microscopic examination of the heart demonstrated anæmic necrosis of the muscular septum in the region of the bundle of His consequent upon a recent thrombosis of its nutrient arteries. Elsewhere the heart muscle was healthy.

A case of Stokes-Adams disease, with dissociation of the auricular and of the ventricular rhythm, is reported by Lichtheim,<sup>3</sup> who regards the case as an instance of "heart-block."

A. Belski<sup>4</sup> also communicates a genuine case and two non-typical cases of the affection.

G. Joachim<sup>5</sup> too has studied four cases suggesting a disturbed conduction of stimuli, which confirm von Wenckebach's observations.

THE AURICULOVENTRICULAR BUNDLE OF HIS. A communication by A. Keith, of great interest to pathologists, will be found in the *Lancet* for March 3, 1906, p. 623. According to L. Aschoff's<sup>6</sup> account of Tawara's original description the delicate bundle of fibres passes forward from the coronary sinus through the interauricular septum to the central fibrous body of the heart, on which it forms a plexus. One of the bundles from this plexus breaks through the fibrous body into the interventricular septum and is distributed subendocardially on the right and the left sides of the latter. The auricular part of the bundle is made up of very fine, richly nucleated fibres, and the fibres of the ventricular part belong to the Purkinje type of fibres. The diagram (Fig. 2) contributed by Keith is essential to understand the detailed directions of the search which he describes, and will be doubtless welcome to clinical readers of these pages.

The cardiac arrhythmia were proposed for discussion at the Munich Congress of Internal Medicine, April 23 to 26, 1906,<sup>7</sup> by Hering, of

<sup>1</sup> British Medical Journal, February 10, 1906, p. 378.

<sup>2</sup> Journal of the American Medical Association, March 31, 1906; Editorial, Ibid., March 3, 1906.

<sup>3</sup> Deutsch. Archiv f. klin. Medizin, Band lxxxv., Heft 3 and 4.

<sup>4</sup> Zeitschrift f. klin. Medizin, Band lvii., Heft 5 and 6.

<sup>5</sup> Deutsch. Archiv f. klin. Medizin, Band lxxxv., Heft 3 and 4.

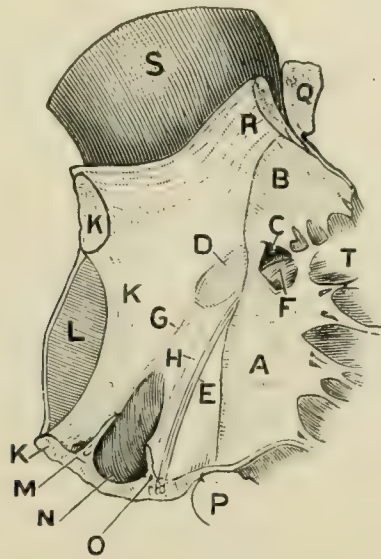
<sup>6</sup> Münchener med. Wochenschrift, September 26, 1905.

<sup>7</sup> British Medical Journal, May 5, 1906.

Prague, who reviewed the studies on the *pulsus paradoxus*, the *pulsus alternans*, the *pulsus bigeminus*, the *extrasystoles*, and also on *heart-block*. This was first described and explained by Gaskell (the founder of the myogenic theory) in the tortoise, after section of all the nerves passing from the sinus to the ventricle, except a bridge of auricular tissue over which the contractions still pass, unless artificially stopped. The same structures and mechanisms were demonstrated, in 1893, by Stanley Kent and by His, Jr., independently of each other.

Tawara, of Japan, gave at the Congress his exhaustive anatomical and developmental description of the bundle of His. His himself stood out for the possibility of alternatives in the etiological mechanism of Stokes-Adams disease in the shape of implications of the vagus inside

FIG. 2



A, septal cusp of tricuspid; B, infundibular cusp; C, ventricular part of membranous space; D, auricular part of membranous space; E, position of bundle of His in auricle; F, position of bundle of His in ventricle; G, fibrous band of Eustachian valve; H, fibrous band of Thebesian valve; K, annulus ovalis; L, septum ovale; M, Eustachian valve; N, coronary sinus; O, Thebesian valve; P, base of right ventricle; Q, base of right ventricle (infundibular part); R, wall of right auricle; S, aorta; T, interventricular septum.

or outside the skull. Full recognition should be awarded to the work of J. Mackenzie, of Burnley, and of Engelmann and Wenckebach.

H. Kronecker<sup>1</sup> still believes that the systolic impulse is transmitted by nerves alone. In dogs in which he had interrupted the "muscular bridge" he could not detect any alteration in the rhythm of the contractions.

According to L. Vallois and C. Fleig,<sup>2</sup> cardiac arrhythmia is constantly found in the newborn infant. By continuous tracings they have

<sup>1</sup> Compt. rend. de l'Académie des Sciences, Paris, 1905, tome cxli. p. 529.

<sup>2</sup> Académie des Sciences, May 22, 1905; Le Progres Médical, No. 23. p. 356.



also shown the great variations in the frequency as well as in the depths of the respirations even during sleep, and particularly under excitement.

BRADYCARDIA AND ARHYTHMIA PRODUCED BY DEPRESSION OF CERTAIN OF THE FUNCTIONS OF THE HEART. John Hay's<sup>1</sup> case in a male, aged sixty-five years, is the more interesting as it presents the novel feature that when the patient was first seen the block was caused by depression of conductivity, but that later the conductivity became practically normal and the block which persisted was found to be caused by depression of excitability.

Sounds were heard during the diastolic phase of the ventricles; they were synchronous with the wave in the jugular vein caused by the systole of the right auricle. The assumption seems justifiable that the sounds were produced by the auricle in its systole. The depression of the conductivity and excitability of the myocardium were probably due to impaired metabolism, secondary to an insufficient blood supply, the result of arteriosclerotic changes in the coronary arteries. The excitability of the musculature was unstable, possibly as a result of nervous influences, such as mental excitement.

Other important papers have appeared. In Medea's<sup>2</sup> two cases there was bradycardia, and epileptiform attacks increasing in frequency until death. The main lesions discoverable were atheroma of the circle of Willis and of the basilar artery, and chronic interstitial nephritis. He could find no lesion of the medulla or vagus roots. Medea points out that the epileptiform attacks are akin to the so-called "senile epilepsy" of old persons with arteriosclerosis. Syncope and bradycardia may similarly be attributed, in some cases at least, to arteriosclerosis in the medulla. He believes that the syndrome is the result of the conjunction of cerebral arteriosclerosis with the other causes of bradycardia.

In Foley's<sup>3</sup> cases no autopsy was performed. The first was a man, aged fifty-seven years, with slow pulse (20 to 52) and vertiginous attacks, in one of which he died. The other a youth, aged nineteen years, who after diphtheria was subjected to fainting attacks associated with bradycardia and, on one occasion, opisthotonos. The bradycardia persisted for some time, but gradually disappeared, together with all other symptoms. Foley quotes other cases in the young. In some cases nervous lesions have been suspected, but the one lesion common to both his patients was myocardial, in agreement with the original descriptions by Adams and by Stokes, and with the majority of subsequent records.

<sup>1</sup> Lancet, January 20, 1906.

<sup>2</sup> Le Progrès Médical, February, 1905.

<sup>3</sup> Boston Medical and Surgical Journal, August 31, 1905.

BRADYCARDIA WITH ARHYTHMIA AND EPILEPTIFORM SEIZURES. John Magee Finny's<sup>1</sup> patient, a woman, aged forty-two years, died suddenly and was not autopsied; but important observations had been made with the *x*-ray. Various questions suggest themselves to Finny: (1) What was the nature of the disease in one relatively young and apparently quite sound? (2) Were the faint sounds heard during the long pulseless intervals (the longest lasted seven minutes) due to *hemisystole* (he thinks not, in spite of Broadbent, Wenckebach, and Maynard having entertained that possibility) or were they *auricular*, or lastly *ventricular of diminished intensity*? (3) Were the fits and the cardiac condition causally interconnected, and if so is Trippier right in regarding the fit as the cause?

THE CASE OF SYNCOPAL BRADYCARDIA SHOWING AN INDEPENDENT ACTION OF THE TWO SIDES OF THE HEART reported by J. S. Maynard<sup>2</sup> has given rise to considerable discussion. His evidence for assuming a dissociation of the two ventricular beats consisted in the absence from the descending or diastolic limb of the sphygmogram of any indications of the precordially well-marked, audible, and palpable, secondary impulses. But the view was taken by others that the unregistered impulses might have been due to auricular pulsations. A. M. Gossage does not think that these are ever audible events in the absence of valvular lesions, in opposition to the view held by Wenckebach, J. Mackenzie, Gibson, and J. Hay. The only important argument adduced by Maynard in support of a truly demisystolic nature of the contractions is that they conveyed a good impulse even to the rigid stethoscope.

THE TREATMENT OF BRADYCARDIA has been much less discussed than its pathology. But various observers have remarked that little accelerating effect is to be gained either from stimulants or even from physical exertion. Maynard, who tried various drugs, including strophanthus and perchloride of mercury, found strychnine to be the most suitable. Atropine was found by Hay to increase the frequency of the stimulus production, but had no influence on the power of conductivity. It might be useful in studying the pulse and warding off attacks, and it is thus part of the symptomatic treatment.

It would appear from the anatomical relations that any sufficiently important lesion of the small cusp of the tricuspid might set up an efficient block. The virtues attributed to iodide of potassium recommend it both for syphilitic and for sclerotic conditions; and these being by far the most likely to be present, it is possible to say that the causal treatment of bradycardia is neither quite unknown nor entirely hopeless.

<sup>1</sup> British Medical Journal, April 14, 1906.

<sup>2</sup> Ibid., October 7, 1905.



**Early or Puerile Paroxysmal Tachycardia.** The attacks described by Emanuel<sup>1</sup> were always preceded by vomiting, and were usually brought on by exertion, lasting from three to twenty-one days. These attacks had recurred about every two months in a nervous boy, aged eight years, since the age of two years. In an attack the boy turned ghastly pale, there was visible, very rapid pulsation of the vessels in the neck, and soon afterward repeated vomiting set in. He was apt to scream with pain at the heart.

**Angina Pectoris.** ETIOLOGY. Interesting though not quite epoch-making lectures on this difficult subject have been delivered by Thomas Oliver,<sup>2</sup> W. Russell,<sup>3</sup> and James Mackenzie.<sup>4</sup>

Oliver remarks that the use of the term "pseudoangina" implies an assumption, perhaps not entirely justifiable, that there is an essential difference other than of degree between "angina gravis" and "angina mitis," as the varieties might be termed, without committing us to any theory. Sir Richard Douglas Powell's synonym for "pseudoangina" is "angina pectoris vasomotoria." Nothnagel also described a special type under that name in which palpitation, precordial pain, a feeling of faintness, coldness of the extremities, lividity, and perspiration are the main features and the prognosis is favorable, though it must be noted that fatal cases do occur. The treatment of the anginal attack is well known. In failing heart, digitalis or nux vomica should be combined with the nitrites. There are, however, cases of true angina in which the nitrites appear to do harm, perhaps owing to diseased arteries not responding or to the arterial tension being quite low. Hence the drug may produce cerebral or cardiac embarrassment and morphine may be the only agent which will bring relief. Between the attacks potassium iodide, arsenic, and nux vomica are useful remedies.

Francis Hare,<sup>5</sup> in his criticisms, points out that the absence of any vasomotor innervation of the coronary vessels would seem to be fatal to Huchard's "vasoconstriction theory;" it does not, however, affect another theory,<sup>6</sup> that of "vascular distention within the mediastinal district, including the coronary area," compensatory to usually existing peripheral vasoconstriction and apparently consistent with all the known facts. The vascular distention would also depend upon: (1) peripheral vasoconstriction; (2) the work done by the left ventricle; and (3) the integrity of the mitral valve. Eliminating any of these three factors will relieve the anginal paroxysm: (1) heat extensively

<sup>1</sup> British Medical Journal, April 14, 1906.

<sup>2</sup> Lancet, September 16, 1905.

<sup>3</sup> British Medical Journal, February 10, 1906.

<sup>4</sup> Ibid., October 7, 1905.

<sup>5</sup> Lancet, September 30, 1905.

<sup>6</sup> Australasian Medical Gazette, August, 1903.

applied to the surface of the body is capable in many cases of relieving angina; but it could hardly be maintained that superficial heat acted as perhaps the nitrite by relaxing constricted coronaries; (2) the work done by the ventricle is temporarily reduced during syncope, and any onset of syncope is concurrent with relief of pain; the work of the ventricle is permanently reduced in the cardiac failure of advanced heart disease, and precordial pain obtains permanent relief on the supervention of cardiac dilatation and failure; lastly (3) as to the integrity of the mitral valve the liability to attacks and the future course of the disease may be entirely changed for the better (Broadbent) by the supervention of mitral regurgitation.

*Vascular distention affecting the cardiac plexuses* would explain the radiating pains and its recurrence the inflammatory changes found in the cardiac plexus by Lancereaux and Huchard and in the right and left coronary plexuses by Mott.<sup>1</sup> Frequent vasodilatation would on Thoma's view explain coronary arteriosclerosis as it may explain the tortuosity of the temporal artery in cases of old-standing migraine or the development of the aneurysm of the coronary found postmortem by Alexander Morison. An extension of the dilated area would explain flushing of the face and the throbbing head and neck. This view is also consistent with the vasomotor view of the mechanism of migraine and asthma, affections connected closely with "functional" angina pectoris.

W. Russell's address, as its title indicates, seeks to prove the relation of angina pectoris and allied conditions to an arteriocardiac reflex having its origin in the abdomen, and it gave rise to some interesting criticisms<sup>2</sup> by Alexander Morison, who holds a "nervous" view of the phenomena. These elicited the reply that Russell did not maintain that an injudicious dietary is always the provocative to angina, but that the provocative might be a meal, physical effort, mental emotion, or toxic substance, or whatever determines the "morbid systemic arterial contraction" which sets up the pain. Alexander Francis also referred to the factor of arterial contraction in asthma, and to his own observations as to the beneficial effect on angina of cauterizing the nasal septum.

James Mackenzie's close reasoning on the known factors in the etiology of angina follows somewhat this line: (1) one cause common to all cases must be present to account for the oneness of the symptomatic effect; (2) prolonged strain as an antecedent and extra strain as the occasioning circumstance fasten the blame upon the muscle; (3) all the functions, save one, special to normal heart fibre can be shown to be intact in many cases of angina; (4) alone the function of contractility is always impaired, as shown by the alternating action of the heart, a

<sup>1</sup> Lancet, September 16, 1905, p. 812.

<sup>2</sup> British Medical Journal, March 3, 1906.



sure sign of an exhausted contractility. This, then, when it becomes established (and is not merely the recurrent, easily reparable, result of fatigue) is in all probability the essential feature in the affection.

As overstrain can always be argued, this explanation fits in of course with all cases; and it specially fits cases without apparent disease of heart or bloodvessels such as that by E. Curtin.<sup>1</sup> Curtin cannot subscribe to Clifford Allbutt's localization of the morbid lesion in the first portion of the aorta, but believes in the causation from systemic arterial overpressure and in a mechanism consisting in a progressive summation of heart stretchings up to the limit of pain. This forms no part of the ordinary occasional distention of hollow viscera. In the case of the left ventricle it is obviated or relieved by the supervention of mitral leakage into the pulmonary vessels. The exciting cause is probably stomach irritation (in tobacco and pseudoangina conspicuously so), as the left unilateral field excludes a pulmonary causation, and antecedent epigastric pain is frequent. According to Head<sup>2</sup> the lungs and heart receive filaments from that dorsal segmental area (from sixth to ninth dorsals) from which the sensory nerves of the stomach originate. In primary implication of the heart the pain should extend as high as the second intercostal space, and this is not true of tobacco angina.

*Aortitis as a cause of anginal symptoms* is familiar knowledge in connection with the chronic arterial affection, but the acute variety is also capable of producing paroxysms. The feature of the attacks due to acute aortitis is, as stated by Sir William Broadbent,<sup>3</sup> that they do not require the stimulus of exertion, but originate without apparent cause during the patient's quiet rest in bed. The suggested explanation is that the coronary orifices are being encroached upon by some local increase in the soft swelling of the intima.

THE TREATMENT OF ANGINA PECTORIS resolves itself according to Sir William Broadbent<sup>4</sup> into that of high arterial tension. The dietetic aspect of this arterial treatment is not less essential than the medicinal. Indeed, nothing can equal its importance. Absolute milk diet where it can be enforced simplifies for a while the difficult question of supplies. But in all cases and stages the amount of animal food, and especially of the richer meats, should be reduced to a minimum; and it is worth noting that George Oliver finds a higher arterial tension after roast meat than after boiled meat, showing how much harm is avoided by eschewing all meat extracts. But the list of avoidables is too long to give in full. Hygiene is essential and claims some form of exercise, however slight its degree. The first medicinal indication is elimination; simple hot

<sup>1</sup> British Medical Journal, April 14, 1906.

<sup>2</sup> Brain, 1905.

<sup>4</sup> Lancet, May 27, 1905.

<sup>3</sup> Lancet, May 27, 1905.

water, aperient waters, and the alkaline salts help in that direction. Mercurial aperients and iodides are effectual depressors, and their action may be intensified by colchicum or ipecacuanha. Nerve tonics may need to be associated also, but the most constant collateral indication is the treatment of any failure of digestion. As regards the direct production of vascular relaxation we have nothing more effectual than amyl nitrite for immediate (if somewhat evanescent) effect, and then nitroglycerin, the nitrates, and erythrol tetranitrate, in ascending order of duration of action.

**Treatment of Heart Disease.** THE DIGITALIS EFFECTS IN HEALTH are found by A. Fränkel<sup>1</sup> to consist mainly of a slowing of the heart rate due to a prolongation of the diastole. There is no change, and not any rise, in the blood pressure. Should, however, this slowing effect be neutralized by an injection of atropine, there is then a rise in the pressure. It would seem then as though the slowing of the heart had some checking influence upon the rise in blood pressure.

DIGALEN when internally administered is found by E. J. Haberfeld<sup>2</sup> to act like digitalis, but to be free from its gastric irritating and cumulative peculiarities. It also acts more quickly, and the dose taken is not an uncertain but a known quantity.

The virtues of digalen and particularly of its intravenous injection are set forth by Ernesto Pesci,<sup>3</sup> of Turin, in a lengthy clinical study. "Safe, prompt, and successful" is his description of the latter method. Intramuscular injections can be resorted to as a relatively inferior substitute when it is contraindicated by any special difficulties.

*The indications and the doses* are given thus: (1) For a tonic action upon the heart 203 c.c. (5 drachms) internally may be prescribed and this administration should be diminished from day to day and stopped after the fourth or fifth day. (2) Loss of compensation of myocardial, mitral, pericardial, or infective origin calls for a single intravenous injection of from 3 to 5 c.c. (45 to 75 minims) in the morning. This may perhaps need repeating the same day—or may not be again required. If renewed daily the dose should be progressively reduced. (3) In cardiac failure of arterial origin numerous cases observed by Pesci convince him that when the loss of compensation is accompanied with distinct diastolic murmurs, digitalis and, better still, digalen are indicated. In a post-script he draws attention to the bibliography of digalen published in the *Zentralblatt f. innere Medizin*, 1905, No. 27.

STROPHANTHUS AND STROPHANTHIN-G (THOMS). K. Hochheim<sup>4</sup> furnishes us with the results of a laborious research into the clinical

<sup>1</sup> Münchener med. Wochenschrift, 1905, No. 32.

<sup>2</sup> Fortschritte der Medizin, 1905, No. 28.

<sup>3</sup> Zentralblatt f. inn. Medizin, November 4, 1905.

<sup>4</sup> Ibid., January 20, 1906.



properties of strophanthus seeds, an African arrow poison first introduced by Fraser in 1885, and particularly of strophanthin-G, with which most of his experiments were conducted. Unlike digitalis some of the active principles of which have been injected into the veins with good results (Kottmann injected as much as 4.5 mg. digitoxin solution; and Mendel 2 c.c. digitalone, equivalent to 0.2 pulv. fol. digitalin), the virulence of strophanthin forbids its intravenous use, which leads in animals to violent convulsions and dyspnœa or paralysis. On the other hand excellent effects may be obtained from its internal administration. Hochheim was able to confirm in the main the facts already known concerning the marked divergence between the mode of action of the two drugs.

Although strophanthus may excite vomiting apparently from local irritation, the vomiting is not progressive and is easily controlled by small doses of opium. This partly depends upon its other peculiarity a freedom from cumulative action. It does not raise blood pressure in the same marked degree as does digitalis. But this is not an essential for the relief of failing compensation as was shown by Sahli<sup>1</sup> in the case of digitalis.

If as is generally taught strophanthus does not occasion any peripheral vasoconstriction, it is clear that the prolonged diastole which it procures by slowing the heart would enable the arteries to empty themselves and would lead to pulse conditions more analogous to aortic reflux than stenosis. This explanation is borne out by Albert Fraenkel's experimental observations<sup>2</sup> that the blood pressure does rise under strophanthus when the pulse retardation is prevented by the injection of atropine.

The chief clinical virtues of strophanthus are that *it slows the pulse, that it remedies arrhythmia, and that it is a strong diuretic*. It is upon these factors that it depends for success in restoring cardiac compensation. Hochheim recognizes that it sometimes fails in this, and that it cannot be said to equal digitalis in cardiorenal efficiency. But in some cases digitalis has been known to fail conspicuously where caffein or theophyllin have given relief. The individual factor cannot be excluded, and this must always be an argument against the "one remedy" policy and in favor of the trial of so potent and so definitely specialized an agent as strophanthus. The maximum dose of strophanthin-G (Thoms) recommended by Hochheim is 0.005 mg. (gr.  $\frac{1}{350}$ ), and the maximum daily administration 3 cg. (gr.  $\frac{1}{4}$ ); but it is well to begin with smaller amounts. He is not in favor of its being used subcutaneously.

<sup>1</sup> Congress f. innere Medizin, 1901.

<sup>2</sup> Münchener med. Wochenschrift, 1905, No. 32.

FORMIC ACID has not given Livierato<sup>1</sup> the striking cardiac results reported by French authors. His clinical observations on nine patients suffering from tuberculosis leave him in doubt as to its possessing any appreciable influence upon the myocardium, although a recognized tonic for other muscles.

OPIUM is used by Musser<sup>2</sup> in small continuous doses in some conditions of myocarditis or of heart debility. He believes that it counteracts the tendency to asystolism and to angina, and that it also relieves the work of the heart indirectly by lessening waste and the visceral labor, of metabolism. The dyspnoea of myocardial failure, Cheyne-Stokes respiration and the tachycardia of Graves' disease are often amenable to its comforting influence.

STRYCHNINE AND THE TREATMENT OF SHOCK. Some discouragement has resulted from recent researches on strychnine, after the good opinion which had been held of its administration in shock. Crile's investigations are more specially answerable for these doubts, and his own opinion is adverse to the claims of the drug. H. A. Hare in an important editorial<sup>3</sup> takes up the question as one much too responsible to be decided from any partial aspect, particularly when the measures condemned from the laboratory have been favored with clinical success. Hare's view will receive the support of many physicians, as the loss of strychnine would be a serious therapeutic loss. After all, as he points out, the fact demonstrated by Crile that strychnine does not materially raise blood pressure must not be allowed to obscure the main issue, that relating to its life-saving capabilities, which are attested to by a wide clinical experience. It is not an argument against its use that we possess other remedies, such as saline infusion, and adrenalin, which are efficient in raising blood pressure. All the greater the reason for adding to their action not only the influence of external heat, but that of a drug such as strychnine, the manifest potency of which is now shown not to reside in pressure-raising which we can command by other means. Strychnine clearly does something else, too precious to be given up on merely theoretical grounds. This is most opportunely pointed out by Hare when he says that "it is essential to employ a remedy which will stimulate the entire organism and so cause a re-establishment of aberrant or arrested function everywhere."

His remarks are the more important as it is obvious from the opinions of W. W. Keen, E. E. Montgomery, E. Martin, J. C. Da Costa, W. L. Rodman, and E. La Place<sup>4</sup> that with the growing favor shown to the intravenous use of adrenalin and of normal saline solution there is a tendency to neglect the advantage of a powerful auxiliary agent.

<sup>1</sup> Gazz. degli Osp., November 26, 1905.

<sup>2</sup> Amer. Jour. Med. Sci., Jan., 1906.

<sup>3</sup> Therapeutic Gazette, December 15, 1905.

<sup>4</sup> Ibid.



THE NAUHEIM TREATMENT has been considered by Alexander Morison,<sup>1</sup> and considerable divergence of opinion as to its value has been elicited. Morison recognizes three groups of patients as suitable: (1) those with slight myocardial weakness but no organic lesions; (2) those in whom it was associated with organic valvular disease other than aortic regurgitation and disease of the right heart or extracardial adhesion; and (3) older patients with myocardial debility, without arteriosclerosis, without organic valvular disease, without disease of organs other than the heart, and without symptoms of angina. But in the experience of Bezley Thorne there are no cases in which the results of treatment are more strikingly satisfactory than in septuagenarian atheroma. Even in the graver forms of angina pectoris and in aortic regurgitation, provided there are no clinical grounds for coming to the conclusion that the coronary vessels had permanently lost that patency which would be necessary to myocardial repair, good results are obtained. Others deprecated the practice of sending moribund cases across sea and continent, in search of a treatment which might be a useful help but was not a specific. It was notorious that suggestion played a conspicuous part in the Nauheim treatment. C. W. Buckley regarded the baths and exercises as one of the modes of cultivating what had been called the "skin-heart" by physical treatment.

It seems obvious that we must keep an open mind. Of course many cases are unsuitable for the systematic Nauheim treatment as laid down in books, but even then modified applications of its methods might suit the indications. There is no finality in clinical matters, and much must always depend upon the amount of care and individual trouble bestowed upon cases, as well as upon the personal factor in each case. It is not advisable to classify the cases into groups and legislate too rigidly for them, as the very next case might prove an exception to the rules laid down. This is especially true of the cases of aortic regurgitation, in which the age of the patient and of the lesion, and especially the degree of the latter, make all the difference imaginable. The most different conditions and the most opposite requirements come under that single heading, and it would be idle to attempt to deal with the entire group in one prescription.

*The Nauheim Baths and Exercises.* Wachenfeld,<sup>2</sup> of Bad-Nauheim, has entered a protest against the report that heart diseases are generally treated with gymnastic exercises. Out of fifty physicians the gymnastic treatment is solely applied by Schott, and only a few use Zander's apparatus. The good results are entirely due to the baths. Physicians who reject the gymnastic treatment prescribe rest and additional means, such as massage and diet, together with the baths.

<sup>1</sup> Brit. Med. Jour., February 24, 1906.    <sup>2</sup> New York Med. Jour., March 17, 1906.

In cardiac inadequacy, A. Hoffmann,<sup>1</sup> of Düsseldorf, deprecates as dangerous the combination of Zander's exercises with the baths. Absolute insufficiency needs rest in bed, an ice-bag to the heart region, digitalis, and calomel if necessary in large doses, for several days. The diet should be light, preferably fluid; but "thirst cures" are inadmissible.

*The Respiratory Method of Treatment* has been carried out by Max Herz<sup>2</sup> with the help of an ingenious apparatus, the object of which is to provide for respiration an intermittent supply of air with frequent interruptions. The supply-tube, through which the patient breathes with a mouth-piece, is in connection with an interrupter worked by means of a toothed wheel and catch. During the inspiratory stage of respiration the effect of each of these frequent interruptions in the air supply is to give rise to a negative or suctional pressure; but during expiration to a positive pressure. He considers that these alternations favor the circulation as well as the respiratory muscles and, moreover, that a kind of intrathoracic massage is exerted upon the heart. This treatment he thinks is analogous to the Nauheim cure, to the "terrain" cure, and to the gymnastic cure. The sittings should at first be limited to fifteen seconds, but eventually may be increased to two and a half minutes.

**BANDAGING THE EXTREMITIES IN CARDIORENAL DISEASE.** As a cardiorenal remedy of some value A. Plessi<sup>3</sup> recommends bandaging the lower extremities. As neither the pressure nor the frequency of the pulse are altered he ascribes the diuresis to a relative congestion of the kidney.

The procedure is well borne by the healthy, but in broken compensation it should be used cautiously. Its beneficial action is quickly manifested in these cases, but the application may have to be suspended after a few hours if there should be much oppression.

## THE BLOODVESSELS.

**Reversal of the Circulation within a Limb.** It is a matter not devoid of clinical interest that A. Carrel and C. C. Guthrie<sup>4</sup> should have found it possible to bring about a complete reversal of the blood current in some of the vessels of a limb (after about three hours for accommodation after the operation) by an end-to-end anastomosis between artery and vein. The initial obstacle of the valves in the veins is quickly overcome.

<sup>1</sup> Deutsch. med. Wochenschrift, May 4, 1905, xxxi.

<sup>2</sup> Ibid., 1905, No 30.

<sup>3</sup> Riforma Medica, September 16, 1905.

<sup>4</sup> Annals of Surgery, February, 1906.



**Obliteration of the Superior Vena Cava of Long Standing.** In the case recorded by M. Comby<sup>1</sup> the causation was probably from syphilitic sclerous mediastinitis. An analogous case was that recorded by M. Apert. The long survival of Comby's patient contrasts with Oulmont's statement that this grave lesion is rapidly fatal.

**Thrombosis of the Pulmonary Artery** seems to have existed for a considerable period before death in the case related by M. G. Singer.<sup>2</sup> The patient, a woman, aged twenty-six years, had suffered from palpitation and precordial pain and some cardiac dilatation, with cardiac murmurs. Signs of pulmonary tuberculosis also supervened and for six weeks prior to death the murmurs ceased to be heard, and the prominence and exaggerated pulsation of the precordium also disappeared. The autopsy revealed some hypertrophy and partial occlusion of the pulmonary artery by clot.

**A HYDATID CYST AS AN EMBOLUS IN THE PULMONARY ARTERY.** This remarkable case is reported by Garnier and Jomier.<sup>3</sup> The left division of the pulmonary artery was found after death completely occluded at its entrance in the lung by a hydatid cyst. The parent cyst occupied the greater part of the interventricular septum, and presented a perforation into the right ventricle corresponding in size to the escaped daughter cyst. The patient, a man, aged forty-two years, had suffered from cyanosis and severe dyspnœa for six days prior to his admission and survived for three days longer. In this instance the cyst had not set up any secondary thrombosis.

**PULMONARY EMBOLISM BY ASCARIDES.** This interesting postmortem finding, reported by F. Lucksch,<sup>4</sup> is perhaps unique. The patient, who had shot himself in the epigastrium fourteen days before death, after progressing favorably until the eighth day, developed acute symptoms at the base of the right lung, for which aspiration was performed, with negative results. This proved to be the seat of multiple gangrenous foci, due to fecal infection conveyed by the ascarides. The worms had gained access to both pulmonary arteries, which they partly occluded. Their wandering was probably conducted along the track of the bullet, which had perforated the pylorus, the posterior wall of the common bile duct, the inferior vena cava, and thence through the right chambers of the heart.

**A CASE OF COMMUNICATION BETWEEN AN AORTIC ANEURYSM AND THE CONUS ARTERIOSUS OF THE PULMONARY ARTERY** in a man, aged forty-two years, is reported by Kaufmann.<sup>5</sup> The case is of singular

<sup>1</sup> Soc. Méd. des Hôp., February 9, 1906.

<sup>2</sup> Soc. of Internal Medicine, Vienna, February 8, 1906.

<sup>3</sup> Presse Méd., June 14, 1905.

<sup>4</sup> Wiener klin. Wochenschrift, April 13, 1905.

<sup>5</sup> Ibid., 1905, No. 39.

interest because of the unusual duration (two years) and of the characteristic symptoms. There was a definite onset, with pain and dyspnœa, and the characteristic cyanosis and continuous murmur, with systolic reinforcement over the pulmonary site and to the left of it. Two circumstances may have contributed to prolonging life. The pericardium was adherent and the pulmonary artery itself was compressed by the aortic aneurysm. Both these circumstances must have limited the systolic charge of the lungs, which otherwise must have undergone a more rapidly progressive increase.

**Aneurysm.** HÆMOPTYSIS FROM ANEURYSMS. Hæmoptysis, when it is traceable to an aneurysm, almost invariably arises from the pulmonary artery. The miliary aneurysms, or small erosions, of the minute divisions of the pulmonary artery account for the early hemorrhages of tuberculosis; the well-known but not always easily found pea-sized or marble-sized aneurysms of its rather larger branches account for the terminal hemorrhages, which are usually sudden and profuse, and which may be preceded by a slight premonitory blood-staining of the sputum. The rarity of recovery is due not only to the various conditions which oppose early clotting, but to two major factors: one special to the hemorrhage from the pulmonary artery, the other incidental to profuse hemorrhage into the lung from any source. The first of these arises from the fact that the blood which bursts from a pulmonary aneurysm is withdrawn immediately from the heart itself, the pressure within the pulmonary capillaries falling to nothing, or becoming probably suctional by reason of their elastic surroundings, so that the left side of the heart is abruptly deprived of its expected charge, and remains almost empty after the systole which immediately preceded the rupture when the bleeding occurs from a systemic vessel. The blood supply to the heart is not interfered with the same directness in any form of systemic hemorrhage. We, therefore, find in this inevitable sequence an additional explanation for the fulminant suddenness of death from rupture of a pulmonary aneurysm.

The other factor is not special to the pulmonary source of the profuse hemorrhage but to the structure and functions of the bronchial system in which it occurs. Thus, in cases of rupture of a pulmonary aneurysm, whilst the heart stops because it is emptied of blood, respiration may stop because the bronchi are kept full of it. Whether this "drowning in blood" is to take place in any given case is purely, as pointed out by R. L. Bowles long ago, a question of gravitation, and, therefore, of posture. Fluids of any sort, whether in the shape of a beverage, of regurgitant stomach contents, or of pus from an empyema, would, if pumped into the bronchi, lead to the same result as blood from any source, if a ready escape were not provided for them by posture.

These general remarks on hæmoptysis may tend to emphasize the



most interesting features of a case of *Recurrent Copious Hæmoptysis from an Aortic Aneurysm*, contributed by T. W. Clarke.<sup>1</sup> This occurred in a man, aged thirty-nine years, whose symptoms of aortic aneurysm were of twelve months' standing, and had culminated in a profuse hemorrhage preceded for a few days by slighter expectorations of blood. A few days later began a remarkable series of sixteen hemorrhages between July 23d and September 14th, each brought on with paroxysmal cough, by some slight muscular exertion, and stopped by morphine. The total aggregate of blood lost was reckoned to be fourteen pints. He died after a fit of anger on September 15th, from exhaustion aggravated by the pressure of a large effusion (3000 c.c.) in his left pleura. It was found that a spherical aneurysm 9 cm. in diameter, filled with laminated clot, sprang from the side of the aorta 3 cm. above the valve; it was covered by the pericardial and pleural membrane, but presented a rent 5 cm. long in the latter, through which small bronchial divisions could be traced, setting up a communication between the aorta and the bronchial system, which, however, contained then no blood. From these anatomical data the clinical events receive a ready explanation and the series of large non-fatal hemorrhages which they rendered possible illustrates in the clearest manner some of the differences between the results of the rupture of a pulmonary and of an aortic aneurysm.

NON-FATAL EXTERNAL RUPTURE OF AORTIC ANEURYSM. Premonitory oozings of blood from the distended and protruding sac of a thoracic aneurysm are by no means rare; and extraordinary instances have occurred, as in T. R. Whipham's case, in which part of the tumor itself, including integument, sac, and a considerable thickness of clot, have sloughed away without immediately fatal consequences. Nevertheless, wholesale hemorrhage, as in that related by H. C. Gordinier,<sup>2</sup> with temporary survival (in this instance for six days) is quite exceptional. In Balfour's case, narrated in his *Clinical Lectures on Diseases of the Heart and Aorta*, the patient proceeded to squeeze the tumor in the vain hope of emptying it, and lost a quart of blood before he fainted. He survived without further hemorrhage for four months, and died of typhus. Stokes' case, given in his work, *The Heart and the Aorta*, was one of hemorrhage relapsing for a period of one year. The opening was situated above the right second rib (in Balfour's case opposite the cartilage of the right third rib). Some of these bleedings were copious.

After the last one the tumor diminished and the patient declared himself to be quite well when he left the hospital three weeks later. Gor-

<sup>1</sup> Johns Hopkins Hospital Bulletin, March, 1906, p. 98.

<sup>2</sup> Albany Med. Annals, September, 1905, p. 582; Med. Rev. of Rev., October, 1905, p. 523

dinier states that after the drenching hemorrhage his patient recovered consciousness under the influence of the subcutaneous injection of saline solution; the bleeding was finally arrested by passing two sutures round the opening. Six days later hemorrhage recurred, of a less violent kind, but it continued for several hours until the patient died. The aneurysm was of large size, eroding the upper part of the sternum and raising both clavicles.

**Congenital Narrowness of the Aortic System** is the pathological description given by F. Apelt<sup>1</sup> of two cases, not without their parallel in medical literature, in which incurable symptoms of circulatory failure were brought about by severe exertion in a young man, aged twenty years, of delicate build. Conspicuous narrowness of the aorta and of its branches was the only discoverable cause for the dilatation of the heart, with slight left ventricular hypertrophy, and for infarcts and other secondary changes in the organs. No trace could be found either of syphilis or of atheroma. It is much to be desired that we should obtain a better clinical knowledge of this group of cases, although there seems to be little prospect of any therapeutic advantage being gained.

**Abrams' Aortic Reflexes.** The normal percussion reflexes of Cherevsky were described in PROGRESSIVE MEDICINE for September, 1905, p. 86. These reflexes are obtained by striking with a hammer the second right intercostal space or the epigastrium. Albert Abrams<sup>2</sup> obtains analogous results by fist percussion (with interposed hand) of the spinous processes. Dilatation of the aorta is stated to result from percussion of the eighth, ninth, tenth, eleventh, and twelfth spines; and contraction from striking the seventh spine. Abrams' evidence is based upon the increase or diminution of the dull area which he describes as the aortic dulness.

**Arteriosclerosis. ETIOLOGY.** The problem of arteriosclerosis is part of the problem of life itself. We can hardly hope to do more than trace the relations of some of its accidentals, and to puzzle out from the varied histories of its coming, of its vicissitudes, and of its workings, some average notions as to the best means for its control. Let us study the beginnings of the real evil; it is there too that we shall find the best chance for its cure.

This is essentially the view of Bäumlér,<sup>3</sup> who labors to show that we behold in the general changes of the affection a second stage only. The *fons et origo* is a disturbed *metabolism*. The kidney then suffers, and in turn disturbs the circulation, which through ill-working damages the delicate vascular machine.

<sup>1</sup> Deutsch. med. Wochenschrift, 1905, Nos. 30 and 31.

<sup>2</sup> Medical Record, September 16, 1905.

<sup>3</sup> Berliner klin. Wochenschrift, 1905, No. 44.



Alfred Stengel, whose important papers<sup>1</sup> on "The Early Diagnosis of Arteriosclerosis" and on "Arteriosclerosis as a General Disease" contain some of the latest utterances on the subject, puts before us very clearly that the conception of the affection as a passive hardening of the vessel wall and of the disablement of the vascular functions as resulting on the lines of what I may venture to call the "cast-iron pipe and stop-cock" theory is out of date. From the onset, and "with advancing arteriosclerosis," there is a disturbance of the organic functions not confined in a strict sense to the circulation, but involving digestion renal action, various nervous mechanisms, perhaps also the hepatic processes and general metabolism. These are not definitely the results of mechanical disorders of circulation, and the moiety dependent upon the underlying causes of the disease cannot be surely distinguished from that which results from the arterial disease itself. When the latter has become more marked and is finally recognized it is mistaken for the beginning, nay for the cause; and much attention has in this way been monopolized by a series of local developments of the condition with resulting atrophy of the organs concerned. Renal atrophy of arteriosclerotic origin is the most striking instance in point. Thus the genuine "reine etiologie" has been obscured by screening off the wider horizons. Stengel's papers will repay perusal in the original, as their full abstract is too long to be included in this report.

"The Current Theories in Etiology" are set forth by Cowan.<sup>2</sup> They refer to the "hyperplastic and degenerative" nature of the process and to its causation from arterial damage, due to continued high arterial pressure. (1) The latter originates from overwork; (2) from overfeeding; (3) from imperfect excretions, renal, intestinal, or cutaneous; and (4) from poisons, (a) metallic, (b) fermentative, or (c) infective. But of all causes for the local lesions, syphilis is recognized as being the most common.

C. N. Camac,<sup>3</sup> in reviewing the causal factors, including the teratological, devotes considerable attention to the factor of syphilis. This form of arteritis is unknown in animals—and practically unknown in children under six, suffering congenitally, and it is rare before fifteen. In the acquired form its beginnings are most common between thirty and forty. In some form or other syphilis accounts for 32 per cent. of the cases of arteritis, and tuberculosis for about 16 per cent., the colored race suffering four times more frequently than the white. The most interesting of his conclusions is that relating to *aneurysm*, which he finds is not common in arteriosclerosis. Histologically he was able

<sup>1</sup> American Medicine, January 2, 1904; Ibid., February 10, 1906.

<sup>2</sup> The Practitioner, August, 1905.

<sup>3</sup> Amer. Journ. Med. Sci., May, 1905.

to identify the early change in the elastic as a purely physical or molecular one uncomplicated by cellular changes.

Clifford Allbutt<sup>1</sup> objects to Thoma's "protective overgrowth theory," but sees in the local thickening and induration of the intima an inflammatory response to "the pinch of excessive pressure within and excessive tone without."

The causation is regarded by Burwinkel<sup>2</sup> as either *mechanical* or *toxic*.

Distention, as in plethora, causes a loss of contractility; whereas degeneration of the vessel walls may be due to malnutrition, the specific elements of the wall dying and being replaced by connective tissue and calcareous deposits. Thus he distinguishes two forms of arteriosclerosis, *tonic* or plethoric from good living, and *atonic* from hard work and poor nutrition. We must aim at reducing the blood pressure by suitable diet, and the accumulation of fat by exercises and at improving the circulation and oxidation of the blood. Meat should be limited and milk and vegetables given to diminish the viscosity of the blood. The most useful drugs are the iodides and digitalis; and hydrotherapy and baths are also valuable.

The varied local effects of arteriosclerosis, for instance in the *nervous system*, where they are carefully studied by B. C. Loveland<sup>3</sup> and by Albert M. Barrett,<sup>4</sup> cannot be considered in the present report; and we must also forego the fascinating disquisitions as to the "Cause of Senile Decay," in the *Lancet*, 1905, vol. ii., on "Arterial Diseases," and on the "Causation of Tortuosity in Arteries" in the *British Medical Journal*, 1906, vol. i.

THE EXPERIMENTAL PRODUCTION OF ARTERIOSCLEROSIS AND ATHEROMA can hardly be passed unnoticed, as the lesions induced in the rabbit so closely resemble the human lesions. The most recent work, that of Pearce,<sup>5</sup> localizes the earliest changes in the media, both in its muscular and elastic elements, and identifies it as a degeneration or necrosis inviting calcification. Where the latter prevails there is least fracture of elastic fibres and consequent tendency to aneurysm. Pearce inclines to regard the later proliferation of cells in the intima as compensatory, a view practically identical with that of Thoma. As to the mechanism of production of atheroma by adrenalin histology I cannot report adequately. Erb regards it as worked through the vasavasorum; others by toxic effect, though it ought then also to affect more tender vessels than the aorta, to which the lesion is confined; but there is one known factor, that of sustained blood pressure.

<sup>1</sup> British Medical Journal, January 20, 1906, p. 169.

<sup>2</sup> Gazz. Med. Lomb., July 3, 1905.    <sup>3</sup> American Medicine, September 2, 1905.

<sup>4</sup> American Journal of Insanity, vol. lxxii., No. 1.

<sup>5</sup> Journal of Experimental Medicine, 1906, vol. viii. p. 74.



DRUG ATHEROMA. *Infusion of Tobacco* introduced into the stomach of rabbits day by day produces within a few days patches of swelling presenting the characters of early atheroma. P. Boveri<sup>1</sup> refers to other experiments on animals with similar results.

*Concerning Alcohol and Diet*, J. Mackenzie's<sup>2</sup> experience points out a moral. An elderly brewer's agent was complaining of slight attacks of angina pectoris, with arteries thickened and his pulse very hard (210 mm. Hg). He said, "You must give up beer and spirits." He replied, "I'm a teetotaler." "Well, then, you must eat less butcher's meat." "I'm a vegetarian," was his reply!

THE THREE PULSATILE SPOTS IN THE UPPER LIMB, viz., at the elbow, at the wrist, and half-way between these joints, may be made the subject of useful clinical observations. Leon Minervini<sup>3</sup> describes their pathological mode of origin, successively one after the other in the order stated, from affections leading to different degrees of increased tension, including atheroma, arteriosclerosis, Hodgson's disease, or Corrigan's disease. Progressive arterial elongation is induced in the pulsating loops. Disappearance of the pulsation where it had existed argues the onset of relative arterial hypotonus. The causation and mode of origin of the *elongation and tortuosity of arteries* has been freely discussed in the correspondence columns of the *British Medical Journal*, 1905, vol. ii., but definite conclusions are still wanting.

THE TREATMENT OF ARTERIOSCLEROSIS. "Artery mending" is a study of infinite extent, *ars longa*. In the diseased vessels there is an obvious accumulation of lowly organized fibrin, analogous to gummatous material, which is probably removable, and its removal would undoubtedly improve the situation. But there remains, in variable individual proportions, a quantity of atheromatous, of fibrous, or of calcareous deposits. Remedies and solvents have been selected and aimed at them, usually through the alimentary canal, as against targets which it was impossible to miss; and some of the methods have been dietetic rather than medicinal. But there is not yet any strict evidence that the biochemical equations enacted have been identical with those put down in the plan of attack. Some mention has been made in previous reports of various therapeutic suggestions: there are but few novel ones to add to the list.

THE MODE OF ACTION OF IODINE IN ARTERIOSCLEROSIS has been the subject of varied mistaken theories in the past. Long ago Romberg seems to have guessed rather than given proof that the influence was rather upon the blood than upon the vessels. But until quite recently the view had prevailed that the vessel wall was modified in structure or function.

<sup>1</sup> La Clin. Med. Ital., 1905, No. 6.

<sup>2</sup> British Medical Journal, February 10, 1906.

<sup>3</sup> Semaine Médicale, March 7, 1906.

Thus H. Huchard and others have described iodide of potassium as a vasodilator, and as a depressor of arterial tension. O. Müller and R. Inador<sup>1</sup> profess to have shown that it has nothing whatever to do with blood pressure; and that it is also useless where the disease has progressed to its anatomical deformations, although very useful where the trouble is still at the stage of deficient blood irrigation. The reason is, as demonstrated by them, that the action of iodine is to lower the viscosity of the blood "as a whole." The change in viscosity is not traceable in the serum. And as to the number and condition of the red cells no influence has hitherto been identified with iodine.

Romberg's practical remarks<sup>2</sup> point to potassium iodide as the best general remedy for reducing blood viscosity and, therefore, heart labor, viz., five daily doses of 3 grains to be continued with intermissions for three years, the only veto being the complication of pulmonary œdema or of Parry's disease. Sodium and potassium nitrite and sodium carbonate are useful adjuncts. For the early forebodings, quasi neurasthenic, noticeable after the age of forty or fifty and characterized by various forms of irritable weakness, abundant water promotes sleep, and Erb's mild local baths reduce vascular excitability. Quinine, bromides, and valerian are good drugs.

The fact pointed out by Sawada that in the sound kidneyed a low tension arteriosclerosis may exist removes a theoretical objection to the excellent recommendation of small doses of *digitalis* (2 grains fresh powdered leaves daily, Grödel) if not otherwise contraindicated; and Huchard begins with a five days' exclusive milk diet for the plethoric.

Sir James Barr<sup>3</sup> reminds us of the depressor action of *thyroid*, which also increases metabolism, an effect sometimes wrongly attributed to the iodine, whereas Stockman has shown that iodine is merely the stimulant to the glandular activity. And again, ammonium or sodium hippurate, lichenin, leucin, and Witte's peptone lower blood pressure (G. Oliver). Chlorides, particularly of calcium, are to be avoided, as in also adrenalin. The benzoates, the sulphates, and the sulphites are good.

Rabagliati's treatment<sup>4</sup> is to poultice the abdomen for an hour every night for three weeks, to order potassium iodide twice daily after food, and to put the patient on two meals a day, one at 12 M. and one at 6.30 P.M., also to prescribe exercises in the morning in the act of dressing.

SYSTEMATIC HOT BATHS are found by E. Hirschfeld<sup>5</sup> to be an effective mode of treatment of arteriosclerosis in its sthenic phase, viz., when a good left ventricular systole and a good arterial pressure are attested

<sup>1</sup> Deutsch. med. Wochenschrift, 1904, No. 48.

<sup>2</sup> Ibid, 1905.

<sup>3</sup> British Medical Journal, January 20, 1906.

<sup>4</sup> Ibid., March 3, 1906.

<sup>5</sup> Australasian Medical Gazette, July 20, 1905.



by the quality and loudness of the first and of the second sound. The duration of the immersion is usually ten minutes, and the temperature should be accommodated to individual reaction. In the average patient of fifty or sixty years of age, 102° F. is well borne. Hirschfeld justifies his method by the following analysis of the effects expected and observed. The hot bath acts in four ways: It alters the distribution of blood pressure by unloading the internal organs and by increasing the vascularization of the skin; hence, it affords prompt relief in many of the cases of pain associated with internal gout, that frequent source of arteriosclerosis. It increases combustion. It also increases the elimination of waste products. Lastly by opening the channels of the skin, it reduces the pressure of the blood by bleeding the patient into the skin.

The value of the treatment by warm baths receives support from Burton-Opitz's experiments on the effect of temperature on the viscosity of living blood<sup>1</sup> (by Huertle's method). His six investigations were made on dogs with water at 44° C. (111.2° F.) and at 23° C. (73.4° F.) respectively. The viscosity was lessened by the warm and increased by the cold bath. Warm water also produced a decrease and cold water an increase in the specific gravity of the blood. But, on the contrary, hot-air baths render the blood more viscous and also increase its specific gravity.

**Arterial Blood Pressure.** THE SIGNIFICANCE OF HIGH ARTERIAL PRESSURE. L. Krehl<sup>2</sup> contends with considerable cogency that the elevation of pressure in the arterial system is often a protective agency. For instance, in chronic nephritis he sees in it a regulating mechanism, the effect of which is to make up for some of the inefficiency of the renal function by an increased stress thrown upon the glomeruli. Our endeavor should be not so much to lower the pressure by hypotensive drugs as to lessen by elimination and by appropriate diet the supply of the irritants which keep up the pressure.

A. Loeb<sup>3</sup> arrives at analogous conclusions. As a proof of the compensatory nature of high arterial pressure and of cardiac hypertrophy he thinks that the oscillations which occur in the pressure are specially telling. A recrudescence of general vasoconstriction would indicate that the glomeruli had been thrown out of work either by some increase in local congestion and stasis, or through toxic agencies, and that their pressure had fallen too low for the business of filtration.

Acute periods of rise in blood pressure have been noted by Kulbs<sup>4</sup> in twelve cases of more or less excessive abuse of alcohol or tobacco.

<sup>1</sup> Journal of Experimental Medicine, New York, January, 1906.

<sup>2</sup> Deutsch. med. Wochenschrift, 1905, Heft 4.

<sup>3</sup> Deutsch. Archiv f. klin. Medizin, Band lxxxv., Heft 3 und 4.

<sup>4</sup> Ibid., Band lxxxiv., Heft 5 und 6.

These paroxysmal elevations reaching up to 200 mm. lasted for a few days and then gradually disappeared. Kulbs compares these pressure crises to the "vessel crises" of Pal; they are probably due to oscillations in the toxic effects, and they may have an important share in the eventual production of cardiac hypertrophy and incompetence.

THE STUDY OF ARTERIAL BLOOD PRESSURE is being actively pursued by many workers. B. Fellner's<sup>1</sup> clinical observations have convinced him of the uselessness of the sphygmograph as a measure of arterial tension and blood pressure, and of the probable influence of the viscosity of the blood upon the configuration of the pulse curve. Much importance attaches to the determination of the *diastolic blood pressure* in addition to that of the maximum pressure. The normal values, he agrees with Strasburger and Sahli, are: for the systolic pressure 125 mm., for the diastolic about 96 mm., and for the difference which gives the "pulse pressure" about 29 mm. The pulse pressure would thus average about one-quarter of the maximum pressure.

BLOOD PRESSURE IN VARIOUS CLINICAL STATES. Valuable data are contained in F. Geisböck's comprehensive paper<sup>2</sup> which reviews the chief groups of diseases from the point of view of their effect upon blood pressure. Depression is the keynote in prostrating diseases, such as typhoid, pneumonia, tuberculosis, and after tuberculin injections. But nephritis heads the list of the hypertensive affections. It shares, however, this prominent position with one of the most recent of our additions to nosology. In *polycythæmia hypertonica*, which was first described by Geisböck in 1904, at the *Congress f. Innere Medizin*, and of which he now tabulates eighteen cases of his own, the blood pressure rises almost to double the normal value, whilst the number of red corpuscles is sometimes more than twice as great as normal. The symptoms are headache, giddiness, insomnia, stenocardia, and left ventricular hypertrophy, best relieved by free venesection. He is still, however, unable to offer any explanation for this remarkable association between hypertension and hyperglobulia. Circulatory disturbances are more commonly coupled with elevation than with depression of blood pressure, and the effect of digitalis is often to lower the latter. Muscular exertion, which in health raises it slightly, occasions a greater rise in heart disease, and the rise is almost proportionate to the severity of the affection, except in extreme degrees of cardiac failure, when the opposite effect is produced. A similar rise is also observed in healthy subjects under the influence of temporary disturbances induced by various agencies and in particular by alcohol, tobacco, tea, coffee, and even by a large meal, or by excitement in nervous individuals.

<sup>1</sup> Deutsch. Archiv f. klin. Med., Band lxxxiv., Heft 5 und 6.

<sup>2</sup> Ibid., Band lxxxiii., Heft 3 und 4.



Amyl nitrite, chloral, theocin, and caffeine did not materially modify the pressure, and venesection lowered it only temporarily. But Geisböck notes a considerable reduction (from 110 mm. to 55 mm.) after evacuation of a large quantity of fluid in ascites.

In *arteriosclerosis* the pressure showed great varieties, being sometimes quite normal; in other cases, probably not free from kidney trouble, with or without albuminuria, it was exceedingly high.

In *angina*, from observations made in one of the cases, he concludes that the high pressure, which in that case occurred as an after-event, was not to be regarded as the original cause of the trouble.

J. PAL'S NEW SPHYGMOSCOPE<sup>1</sup> for the determination of the pulse pressure in the arm and in the finger pad has enabled him to compare these pressures and to find that they run in closely parallel curves, and also to compare them with the general arterial pressure, which he finds is by no means a steady quantity.

The special advantage of his sphygmoscope is the delicate registration of such small values as that of the diastolic finger pressure. This is obtained with the help of a new principle, that of an "unloaded membrane" (v. Bernd), or "pressure-freed" membrane, both sides of which are placed under identical pressure conditions without the interference of any lever. V. Pal substitutes for his assistant's ingenious "membrane" a "pressure-freed" capillary column of petroleum tinted in red. The stop-cock opens up or stops the access of atmospheric pressure and conveys to the apparatus the pressure from the arm or finger; and a four-way tap connects it with the manometer and with a pressure ball; and also serves to "set" the instrument before taking the observation of the oscillations of the capillary column. Riva Rocci's pressure cuff is used for the arm and Gärtner's tonometer ring for the finger. To take a reading the pressure of the cuff is relaxed until the radial pulse reappears; and further gradually relaxed until the pulse oscillations from the pressure cuff attain a maximum, and finally begin to decrease in size. This is the phase for the registration of the *diastolic pressure* since the external pressure is now ceasing to compress the vessel. The previous phase, that of maximal oscillations, expressed the *systolic* arterial pressure. According to v. Pal's account the sphygmoscope bids fair to be of practical value.

THE TREATMENT OF "HIGH TENSION." A. Erlenmeyer's<sup>2</sup> treatment is varied according to the degree of arterial pressure in each case: (1) In some instances the pressure is sufficiently low to call for "raising," and this may be carefully attempted by means of carbonated saline baths at 30° C. (86° F.). (2) Moderate hypertension requires a graduated

<sup>1</sup> Zentralbl. f. innere Med., February 3, 1906.

<sup>2</sup> Deutsch. med. Wochenschrift, xxxii., No. 7.

administration of iodides to reduce the viscosity of the blood. (3) For those immoderate elevations of pressure which may threaten disaster the iodides do not suffice, and periodical venesection may have to be resorted to.

“Due respect for the mechanisms of nature” is the keynote of Krehl’s valuable remarks.<sup>1</sup> Nephritis with its impeded urinary excretion affords us the demonstration of the value and of the indispensable offices of high arterial pressure. Pressure becomes a necessity when an obstacle is raised against the easy elimination of the waste products. Our aim should not be to paralyze this saving apparatus, but to render its operation superfluous by reducing the urinary products. A milk diet does this for nephritis, and under it the pressure sinks automatically.

*Vascular Spasm and Vascular Fibrosis.* Under this heading H. A. Hare<sup>2</sup> contrasts conditions calling for very different treatment and materially differing in their prognosis, although they are apt to occur in the same pursuits of life, *i. e.*, those of the banker or broker, of the iron-master, of the lawyer, and of the physician, all of them being characterized by constant nervous and vascular strain.

1. In the first group of cases *uncomplicated vascular spasm* is the cause of the persistent high tension which ultimately culminates in cardiac distress under the provocation of some unusual exertion. Timely cessation from physical and from mental stress, the use of the nitrites, and the avoidance of stimulants may suffice to restore these patients to health.

2. Spasm is also present in the second group, but it is associated with the much more serious factor of *fibroid change*, which is not amenable to nitrites alone, but which calls for a combination of remedies, and particularly for the iodides, in addition to rest and to the most careful hygiene.

3. To the third group belong cases to which Hare is the first to draw our attention, in which a long history of high arterial pressure, sometimes exceedingly high (255 mm. in an instance narrated), the tension becomes changed to a relatively low one in spite of considerable cardiac hypertrophy because the arteries, also hypertrophied, prove unequal to the peripheral resistance of the fibroid arterioles and become relaxed. So long as the heart preserves a certain vigor, the condition of the pulse is a remarkable one, being so largely owing to the volume of the systolic change, and yet without corresponding excess of tension. The interpretation of these cases is made easy by the suggestion which we owe to Hare, that *loss of compensation has taken place in the hypertrophied arteries*. He argues with much reason that as the heart is a specialized part of the vessels, any influences bearing upon both are likely to produce

<sup>1</sup> Deutsch. med. Wochenschrift, 1905, xxxi., No. 47.

<sup>2</sup> The Therapeutic Gazette, December 15, 1905.



analogous results, and that just as the myocardium finally loses tone and nutrition, so may the myarterium, if I may use such a word. The relaxed arteries become stretched and unusually prominent and take on the outward appearance of veins. The increased capacity of the arterial system is a source of some relief to the embarrassed heart, but of an ominous kind, as at this advanced stage the cardiac failing compensation cannot be restored. Therapeutically Hare's case was remarkable for the tolerance shown for large doses of nitroglycerin (upward of a grain a day) and of extract of aconite (nearly three grains daily) taken in addition to iodides, which resulted from the high degree of the cardiac hypertrophy and of the peripheral vascular fibrosis.

It is of course conceivable that in other cases the loss of vascular compensation may not be terminal, but as so often happens with the heart itself temporary and curable. In his concluding remarks Hare alludes to these occurrences in the following terms: "This rupture of vascular hypertrophy often gives the heart a rest and permits it to recover from its fatigue, and so life is saved. It is possible if the peripheral fibrosis is arrested for the vessels also to regain power and a general improvement to ensue. The cardiac stimulants are not needed in these cases as much as rest and the skilful use of alteratives and vascular sedatives."

# DERMATOLOGY AND SYPHILIS.

By WILLIAM S. GOTTHEIL, M.D.

## DERMATOLOGY.

**Acne. TREATMENT.** In my reviews of 1903 and 1904 some space was devoted to this subject, and during the last year or two the almost endless succession of articles upon it shows very clearly that in spite of the multitude of suggestions there is no generally satisfactory plan of dealing with its various forms. My own experience is that failure is inevitable in some cases, and this not only on account of the inefficiency of our remedial measures, but also because of the unwillingness of the patient to recognize the fact that a bad case of acne is often a very difficult matter to cure, and calls for unremitting care and attention to details on the part of the attendant and some sacrifice on the part of the sufferer.

The most notable suggestion in the way of new treatment has been that of Kromayer,<sup>1</sup> who has devised a small, sharp, cylindrical punch, driven either by a dental engine or a motor, and with which he removes small cylindrical sections of skin containing the infected glands. The revolving knife is plunged into the lesion down to the subcutaneous tissue, and the minute detached cylinder removed with forceps and scissors. For the larger indurations free drainage is secured, and the smaller beginning gland infections and comedones are removed in toto. The cylindrical punches employed are 0.7 to 1.2 mm. in diameter. Kromayer claims that the method is simple, certain, and agreeable; that the pain is not greater than that occasioned by puncture; that the inflammatory reaction subsides so rapidly that patients worked on in the morning can go out in company in the evening, and that the scarring is so minute as to be undetectable. He even recommends these minute punches for the removal of hairs, it being so rapid that from 100 to 300 can be removed at a single sitting. Local ethyl chloride anæsthesia can be used, but is almost always unnecessary.

Kromayer's instrument is simply the cutaneous punch suggested years ago by Keys, of New York, driven by power instead of by hand. I have had and used several of them for years past, mostly of the larger sizes for getting microscopic material by biopsy, but also one very small

<sup>1</sup> Berliner klin. Wochenschrift, May 16, 1905.



one, less than a millimetre in diameter, which I have attempted to use for therapeutic purposes a number of times. I am sure that the little operation is painful, much more so than simple puncture, and that hemorrhage is comparatively free and long continued. Considering that most of our acne and hypertrichosis patients are women, and that the regions attacked are amongst the most sensitive in the body, I hardly think that the Kromayer method will be very popular here. I do not know of any one as yet using it. It may possibly be, however, that the rapidity of operation when motor driven may make a difference, and I am having some minute punches made now for the purpose of trying them.

A suggestion of apparently greater feasibility is that of Moschkowitz,<sup>1</sup> who reports good results from the application of *Bier's principle of hyperæmia* in the treatment of acne. Dry cups are applied to the affected region for half an hour, once or twice a day. The suction is to be slight, and each cup is allowed to remain in place only for one or two minutes. From two to five sessions for an affected area are all that is required. Moschkowitz reports eight cases satisfactorily treated in this way alone. I have used it in one case with apparent good results, but I employed the other and more usual means at the same time. I use a very small pump attached to a motor, thus avoiding the employment of the alcohol flame.

Jackson,<sup>2</sup> however, strikes at the root of the matter when he tells us that we must regard our acne cases as individuals whose general health is not perfect. Careful search usually reveals something wrong, anæmia, chlorosis, lithæmia, dyspepsia, constipation, menstrual disorders, or bad hygienic habits. To remedying these our efforts must be directed in the first place, and together with these measures appropriate local treatment must be carried on. This should consist essentially in the removal of all infected foci and plugged glands with the acne lance, comedo expressor, and curette, and then the keeping of the skin as aseptic as possible by means of appropriate lotions. I quite agree with Jackson that the application known in our public institutions here as *lotio alba co.*, the formula for which is: precipitated sulphur, 1 drachm; zinc sulphate and potassium sulphuret, of each 2 drachms; rose-water, 4 ounces, is as good as any one that we can use in these cases.

Williams<sup>3</sup> lays stress on the importance of preventing secondary infections in these cases; to be effected by the use of proper antiseptic soaps and lotions, care being taken not to injure the inflamed areas by too vigorous action. Tyldesley's<sup>4</sup> methods are essentially the same; and as regards the employment of the *x-ray* in these cases, I agree with

<sup>1</sup> Medical Record, January 13, 1906.

<sup>2</sup> Ibid., March 18, 1905.

<sup>3</sup> New England Medical Monthly, August, 1905.

<sup>4</sup> Ibid., April, 1905.

him entirely. If used at all, and even its advocates use other methods in conjunction with it, it should be reserved for the most intractable cases only. Its dangers are becoming well recognized, and I consider it as unjustifiable to use the ray tube on every case of acne as on every case of superficial epithelioma. In most cases of both diseases we have entirely efficient and absolutely safe methods of cure, whose only disadvantages are that they are less dramatic and mysterious.

**Ainhum.** Several instances of this rare affection have been reported recently, and the whole subject has been ably reviewed by Brayton<sup>1</sup> in connection with his account of a case of his own. The affection is essentially a dermic pathological process, the ultimate result of which is a spontaneous amputation of one or more fingers or toes. The little toe is the part most commonly affected.

The first cases were described in Brazil forty years ago, but since then it has been noted in all parts of the world; in the United States not over twelve have been observed, and all of these have been in negroes. Yet in India, according to Crawford, there is one case of ainhum to every 2000 surgical cases in the hospitals.

The affection begins with a crack or fissure at the root of the little toe, on its plantar or inner side. This gradually extends, generally without ulceration, bleeding, or discomfort to the patient, until the deepened groove encircles the entire digit, and the distal portion of the organ enlarges to perhaps twice its normal size. In the course of two to ten years the greater part of the phalanx is absorbed, and the rest drops off. Painful ulceration occurs only when the diseased part has suffered accidental injury.

The etiology of the affection is still a matter of dispute. It is essentially a disease of the tropics, and of the negro race. A parasitic origin has been claimed by some. Zambaco Pacha believes that it is an attenuated form of mutilating leprosy; the practice among some of the colored races of wearing toe rings, and accidental traumatisms, have been asserted to be its causes; all of these theories, however, lack confirmation. There seems more likelihood, however, that it will turn out to be a trophic lesion, dependent upon some as yet undetermined nervous affection, as Manson claims, or it may be a form of scleroderma.

The histology shows a direct downgrowth of the epithelium with a hyperplasia that finally strangles the papillæ; the blood supply is cut off, and degenerative changes and dry gangrene finally occur. The diagnosis from Raynaud's disease is made by the facts that in the latter affection we have the history of long-standing congestion and pain and the constitutional disturbances. Leprosy may show its manifestations

<sup>1</sup> Journal of the American Medical Association, July 8, 1905.



anywhere on the body; there are other symptoms at some time, bullæ, macules, or tubercles, and the characteristic organism is readily found. Perforating ulcer, such as occurs in locomotor ataxia and other affections, begins as a callosity on the heel or under the ball of the great toe; it is never located just at the digitoplantar fold of the fifth toe.

Treatment from a conservative standpoint is very unsatisfactory. In the early stages of the disorder the patients rarely apply for treatment;

FIG. 3



Dr. Brayton's case of ainhum.

linear incision, curettage, excision, or scarification of the constricting band would then be indicated. Brayton recommends 20 per cent. salicylic acid ointment or wet dressings of Thiersch's solution to remove the horny epidermic layer. Amputation of the toe is the only real method of relief.

An excellent picture of Brayton's case is appended (Fig. 3). Since his article appeared a precisely similar case has been reported and figured by Wheatland.

**Coccidioidal Granuloma.** Under this name Ophüls<sup>1</sup> registers three new cases of an affection somewhat resembling blastomycosis; ten similar ones have been recorded, all in California. The parasite that is its cause is a vegetable one that when cultivated develops into a mould-like growth, and Ophüls proposes for it the name of *oidium coccidioides*. The lesion it occasions differs in several important respects from those of blastomycosis, and the organism itself differs from the blastomyces; its exact status, however, is a matter that must be decided by the professional botanist.

Systemic infection in blastomycosis is very rare, one case of the kind only, that of Walker and Montgomery, having been reported. In coccidioidal granuloma, on the other hand, systemic infection is the rule; in some cases the skin has not been affected at all. The dermal lesions, however, have formed the most prominent feature of the disease in all the cases that have been recognized during life; hence the propriety of including the affection in this review.

The lesions themselves are extremely varied, so that it is difficult to formulate an exact clinical picture of the disease. They are essentially granulomata closely resembling those of tuberculosis, and they may undergo either caseation or suppurative degeneration. In the internal organs, almost any of which may be affected, they form tubercle-like accumulations. On the skin they appear as tubercular and often ulcerated chronic lesions that bear a great superficial resemblance to those of *mycosis fungoides*.

The *oidium coccidioides* occurs in these lesions in the form of spherical bodies that grow to about 30 microns in diameter. They have an irregularly staining protoplasmic body and a double contoured capsule that in the larger forms is thick and often covered on the outside with prickles and even long spines. They fructify by endosporulation, not by budding, as is the case with the blastomyces. As many as 100 or more spores may appear in one of them before they are liberated by the bursting of the capsule. The more of these sporulating forms that are present in any focus the more acute and suppurative is the local reaction. Their number in any given site varies greatly; usually they are numerous enough to be easily found. In the fresh pus they can be readily seen with a low power. For the details of the culture results the reader is referred to Ophüls' article.

So far it has not been possible to trace the source of the infection in any of the cases. As above stated, they have been seen in California only, occasional cases, with no epidemic occurrence, being found. Animals being susceptible to the disease, it has been suggested that the

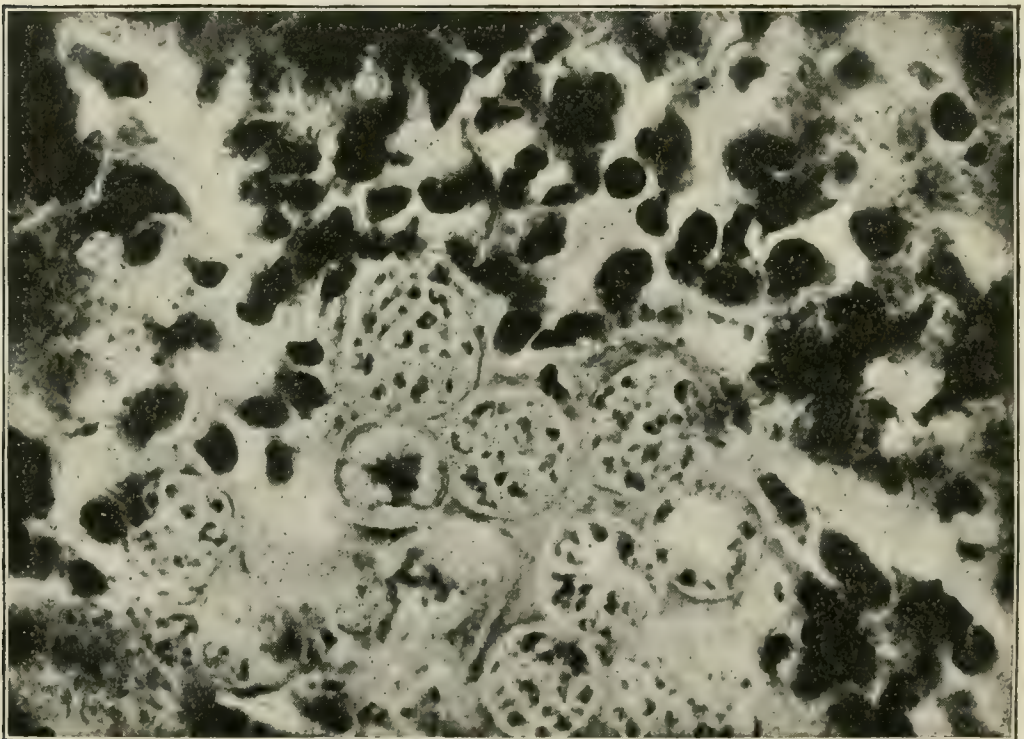
<sup>1</sup> Journal of the American Medical Association, October 28, 1905.



infection comes from them, being only occasionally transmitted to man; but there is no proof of this fact as yet. Ophüls is of opinion that the disease is commoner than the recorded cases would seem to show; this is probably the case, for both clinically and pathologically it bears a great resemblance to tuberculosis. The true nature of the disease has only been recognized after a careful microscopic examination of the diseased tissues or the pus that comes from them. A photograph of the sporulating organism in the tissues is appended (Fig. 4).

A study of Ophüls' cases rather leads me to the conclusion that, for the present at all events, they had better be classed with blastomycosis.

FIG. 4



Oidium coccidioides.

We hardly know enough as yet of the morphology and life history of the organisms in question to make diagnostic distinctions on the basis of differences of fructification; and even infection of the internal organs occurs in blastomycosis, as we have seen.

**Drug Absorption by the Skin.** This is a subject on which our ideas are generally hazy. The deep cutis, of course, abundantly supplied as it is with bloodvessels and lymphatics, readily absorbs materials in solution in contact with it; and when destruction of the epidermis has occurred, there is no obstacle to the process. Material rubbed into the skin under considerable pressure can also be made to enter the pores mechanically. But the question is whether the intact epidermis is per-

meable to substances in watery and other menstrua when placed in contact with them.

The subject has been long debated, and cannot be yet regarded as absolutely settled. That water and watery solutions can pass only in very small quantities if at all seems to be the fact, as Kreidl<sup>1</sup> shows. In oily menstrua, and especially in lanolin, certain substances can demonstrably penetrate the epidermis. Volatile bodies, as iodine, guaiacol, salicylic acid (vaporizing at 35° C.), as well as gases like sulphuretted hydrogen and carbonic acid, do so, and so also do carbolic acid, chrysarobin, camphor, nicotine, etc. As regards *mercury*, the most important of the substances thus administered, whilst the evidence is still not absolutely decisive, the preponderance seems to be to the effect that it does not penetrate the epidermis to any great extent and that the mercurial effects of the inunction treatment are essentially due to the inhalation of the volatilized drug during the process.

In a series of experiments on man and animals Sandurow<sup>2</sup> has attempted to elucidate the dark points connected with cutaneous drug absorption. Various medicaments dissolved in a variety of menstrua and incorporated with various bases were employed. In dogs a fistula was made into the bladder, and the urine after inunction thus obtained pure. The results obtained in general were that the great majority of the drugs experimented with were not absorbed at all. Salicylic acid and aconite were among the few exceptions, and this was believed to be due to physiological action and not to be a mechanical effect at all. Lanolin as a base did not give any especially good results, nor did preliminary preparation of the skin by washing, etc., increase its absorptive faculty at all.

Hirschfeld and Pollio<sup>3</sup> found that iodide of potassium or rather the free iodine gotten from its decomposition was not absorbed when lanolin was used as a base; even olive oil and vaselin were better. Heffter<sup>4</sup> came to similar conclusions.

In a general way we can say that substances dissolved in watery and alcoholic menstrua, as well as those in ointment form, are absorbed, if at all, by the skin in amounts entirely too small to be effective therapeutically. If there is no break of continuity of the epidermis our local applications have a local action merely.

**Eczema Deaths.** I referred to this subject at some length in last year's review,<sup>5</sup> citing several authorities who had recently encountered what they claimed to be cases in point. It is to be noted, however, that these

<sup>1</sup> Handbuch der Hautkrankheiten, Mracek, vol. i. p. 168 et seq.

<sup>2</sup> British Journal of Dermatology, July, 1905.

<sup>3</sup> Ibid., September, 1905.

<sup>4</sup> Ibid., September, 1905.

<sup>5</sup> PROGRESSIVE MEDICINE, September, 1905, p. 109.



authors were mostly pediatricists, and that Jadassohn, with his immense experience in the disease, voiced the general opinion among dermatologists when he said that he had never seen an eczema death. Bernheim-Karrer<sup>1</sup> discusses the subject at length. In one of his cases the autopsy revealed an unsuspected streptococcus focus in one lung, the action at a distance of these germs having also induced slight endocarditis and pleural effusion. Another eczematous infant had attacks of heart weakness, possibly from a similar action of the germs on the cardiac muscle. In another case of recurring eczema, though the child looked dull, there was nothing abnormal in the heart or lungs; an ichthyol-zinc-oxide salve was employed. The child seemed unusually quiet, and was found dead in the morning. Staphylococci were found in the cutaneous lesions and in the internal organs. The author thinks it possible that the eczema, like an extensive burn, may have induced an actual toxic form of staphylococcus mycosis. This assumption was confirmed by a number of experiments on animals. Infection with the staphylococcus alone did not cause by any means such severe symptoms as when the staphylococcus infection was supplemented by a cutaneous lesion, such as a croton-oil blister. The heart seemed to suffer particularly in these cases, and the author concludes that his researches emphasize the importance of careful oversight of its action in cases of extensive eczema.

Bernheim-Karrer's investigations are of especial interest in connection with those made some years ago by Bender, Bockhardt, and Gerlach,<sup>2</sup> which seemed to show a relationship between the pus organisms and their toxins and eczematous processes in general. It is true that in the review of the year following<sup>3</sup> I stated that there had been no confirmation of these discoveries, and none has appeared yet so far as I know. But the chapter cannot as yet be considered closed.

I have myself had occasion, quite recently, to meet my first case of sudden death in an infant soon after the institution of a proper eczema treatment. The patient was a child of a physician, vigorous and well nourished, and healthy save for a fairly extensive erythematous eczema of the body, limbs, and head. The treatment had been wet applications; under which, of course, there had been no improvement, but rather the reverse. The treatment I advised was the discontinuance of all washings and watery applications, cleansing with oil, the application of a weak salicylic acid olive-oil solution, bandaging, regulation of the diet, etc. Not hearing from the child's father, as I expected, some days later I found on inquiry that the child had died. A few days after the treat-

<sup>1</sup> Jahrbuch f. Kinderheilkunde, vol. xlv., No. 6.

<sup>2</sup> PROGRESSIVE MEDICINE, September, 1902, p. 164.

<sup>3</sup> Ibid., September, 1903, p. 133.

ment was instituted the infant had contracted a catarrhal pneumonia, to which it succumbed. Of course, there was not the least reason to suspect the existence of any connection between the eczema treatment and the pneumonia. The dermal lesions were erythematous merely, not weeping or crusted. There are multitudes of infantile eczemas treated every year, and each year many infants die of pneumonia. The very rare event of their concurrence is entirely accidental. It is a good example, however, of the liability to deception in this particular matter.

**TREATMENT OF INFANTILE ECZEMA.** Of all the commoner dermatoses that the general practitioner is called upon to treat there is probably none that gives him greater trouble than the ordinary eczemas of the face and body in nurslings. Whilst it frequently improves under the customary applications, it is difficult to cure it entirely, and its persistent relapses wear out the patience of both the mother and the medical attendant.

Schwab<sup>1</sup> some little time ago gave this subject a thorough consideration. He believes that local parasitic infection, teething, improper food, and neuroarthritic tendencies may all determine its onset; in other words, that the eczema is really a dermal reaction to systemic or local irritants of various kinds. In its essence it is an autointoxication, and it usually occurs in overnourished infants. Observation justifies this latter conclusion; most cases of infantile eczema occur in fat and apparently especially nourishing children. The mother's diet, in Schwab's opinion, is of great importance. It should be moderate in amount, and taken regularly; a mixed diet is best, with not too much meat and no alcohol or coffee. Proper exercise is essential, and a moderate amount of work will only do good. More important, however, is the infant's feeding, and here Schwab enunciates views that I have long held and frequently insisted upon. Most of these infants are overnourished; they take too much food, and especially they take it too quickly. Increase the intervals between feedings within the allowable limits; cut down the nursing at night especially. The common habit of allowing the infant to sleep at the breast at night is utterly reprehensible, as is also the quieting of the infant whenever it cries by giving it the breast. Another point is slow feeding; the child should not be allowed to gorge itself quickly. It takes time and trouble to teach an infant to nurse slowly, but it can be done. A nursing should occupy a definite space of time; the nipple should be withdrawn between every few swallows, and the infant taught to feed slowly. The stools should be watched, and when undigested material appears in them, or when regurgitation becomes frequent, the amount of food should be limited.

<sup>1</sup> Monatshefte f. praktische Dermatologie, November 1, 1904.



Drugs internally are, as a rule, useless or even harmful. Our efforts in that direction should be limited to the administration of such as tend to prevent toxin formation in the infant's gastrointestinal tract. Small doses of bicarbonate of soda or magnesia may be useful, and enemas should be used if the bowels are sluggish.

Locally, the first principle of treatment is to forbid the use of water on the affected skin. I have seen many a case of intractable eczema which refused to do well under the most careful and appropriate treatment, that reacted favorably at once as soon as the washings or wet applications were discontinued. Warm olive oil and a wad of cotton are the only materials allowable for cleansing the inflamed infantile skin. Schwab recommends powders rather than salves as local applications, a suitable formula being: amylum, talcum, bismuth subnitrate, each 20; acid salicylic, 1; menthol, 0.5. I prefer the bland salves: cold cream, boric acid, or zinc oxide ointments. An important point, however, is to have them made up with lanolin or lard, and not with vaselin, as prescribed in the pharmacopœia. This latter base is undoubtedly irritant to inflamed and sensitive skins, and should only be employed where an irritant effect is desired, as in the chrysarobin and pyrogallol ointments used in psoriasis.

Finally, as important as the selection of a proper remedy is the insistence of a proper method of its application, and the prevention of irritation and infection from the child's fingers. It is of very little use to smear ointment on the child's face; let it melt and run off on to the pillows and clothing, and let the child rub and scratch the inflamed areas as it will. Bandages, a mask for the face, gloves on the infant's hands, and even the expedient of confining them in a sheet or the clothing, must be employed. The ointment must be used on linen, and the part properly and securely dressed afterward. With these precautions we shall get results.

Huebel<sup>1</sup> has advanced the theory that in some cases at least *eczema infantilis* is due to too much salt in the food either of the mother or the cow. He claims to have seen spontaneous recovery occur when the defect was rectified. Quillies<sup>2</sup> takes practically the standpoint elaborated above; regulation of diet and feeding, both of the mother and child, are really of greater consequence than the exact local application used. Clenet in his work on this subject advises therapeusis along the same lines.

**Epidermolysis Bullosa.** Engman and Mook<sup>3</sup> have been fortunate enough to have observed four cases of this rare affection; and they have recently

<sup>1</sup> Medical Standard, October, 1904.

<sup>2</sup> Gazette hebdomadaire, 1904, No. 14

<sup>3</sup> Journal of Cutaneous Diseases, February, 1906.

recorded the results of their observations, together with some remarks on congenital absence of the elastic tissue. Three of their cases were in children of six to eight years, and the fourth was in a young girl of sixteen years. In three of the cases, also, the affection was noticed soon after birth; in only one was there a family history of the affection, the patient's mother, mother's paternal grandfather, mother's paternal great-grandfather, a brother and sister, and numerous cousins having been affected. Of course, it was only in a private patient, and an exceptional one at that, that such an exhaustive history could be elicited.

The skin is apparently normal in these cases, only showing the characteristic vesicular and bullous lesions when exposed to trauma. The normal skin, therefore, was studied; and it showed, besides œdema of the epidermis and the cutis, entire absence of elastic tissue in the papillary

FIG. 5



Epidermolysis bullosa. (Drs. Engman and Mook.)

and subpapillary regions, and only sparse and deformed elastic fibres in the deeper regions. The bullous lesions themselves and the tissue adjacent showed, in addition to the ordinary microscopic appearances and the œdema, this same absence of elastic tissue. There was no trace of the periarteritis and periphlebitis, as mentioned by a number of investigators.

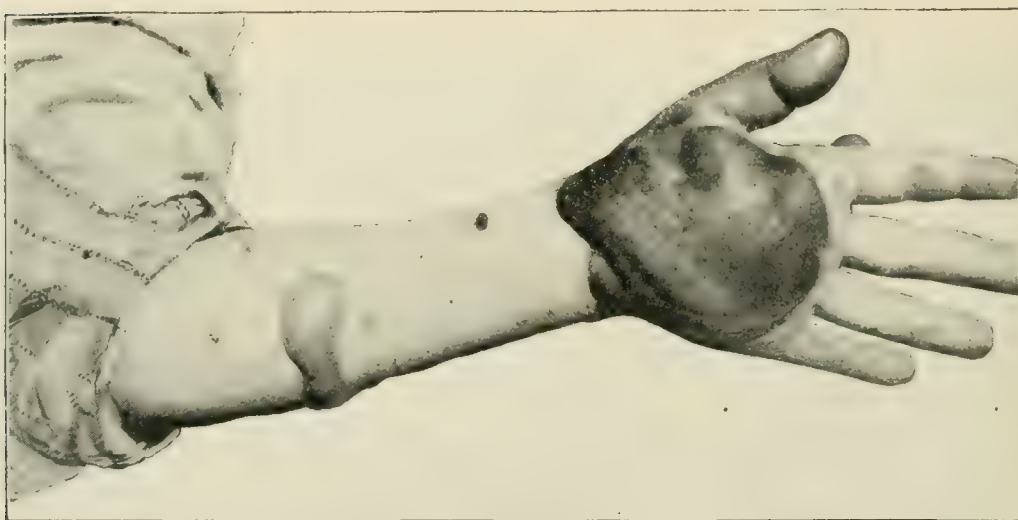
There are apparently two distinct clinical types of this disease or congenital abnormality, as it would be perhaps better to call it. There is the simple form, the only symptom of which is the occurrence of bullæ occasioned by traumatisms, which leave the skin entirely unchanged; and the dystrophic form, in which there are cicatrices, milia, and changes in the nails. Of the latter and more infrequent type I noted a case of



Wende's in the review of three years ago.<sup>1</sup> In this case there was marked skin infiltration after the lesions subsided, decided changes in the nails, loss of hair on the scalp, and absence of the brows and lashes, and a general tenuity of the skin. Wende's microscopic examination did not show absence of the elastic tissue.

The elastic tissue supports and gives tone to the cutis and to a great extent controls the lymphatic and sanguineous circulation. The consequently chronically sodden and weakened condition of the epidermis explains the microscopic findings in the normal skin of these cases, as well as the occurrence of the bullæ under the slightest traumatic provocation. Scar tissue, Engman believes, is caused by secondary infection of the lesions (Figs. 5 and 6).

FIG. 6



Epidermolysis bullosa. (Drs. Engman and Mook.)

**Erysipelas.** The various modes of treating this affection were considered at some length in the reviews of 1902, 1903, and 1904. Last year I did not touch on the subject, because nothing very new or very important had appeared. This year also there is but little of a positive character to report. But a comparative investigation of the various plans of treatment has been made on a large scale, and by a very competent authority, and I think that we now have at our disposal material sufficient in amount, and covering a great enough length of time, to enable us to form a definite judgment as to their value.

I may premise that the usual number of infallible or at all events very valuable plans of treatment have been recorded. Payr<sup>2</sup> claims to have had very numerous good results from the circular compresses

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1903, p. 134.

<sup>2</sup> Wiener medizinische Presse, 1905, No. 381.

recommended by Wolfer, especially when the head or extremities have been affected. This he believes to be due to the venous stasis occasioned by the dressing, rather than to any possible mechanical limitation of the spreading inflammation. Ritterhaus<sup>1</sup> advocates the intravenous injection of collargolum, the disease running a much milder and shorter course than was otherwise the case, though he admits that the local manifestations did not progress very differently from what they do under ichthyol paintings, scarifications, or sublimate compresses. Pantz<sup>2</sup> says that he has had surprisingly good results from mesotan with equal parts of olive oil in six cases. The streptolytic serum treatment is favored by Smith;<sup>3</sup> he adduces a number of histories in support of his contention as to its efficacy. Kaczvinsky<sup>4</sup> is greatly in favor of quinine, internally or hypodermically, attributing its beneficial effects to the antiseptic action of the quinine-containing lymph on the erysipelas streptococcus. Waugh<sup>5</sup> has used pilocarpine in every sthenic and iron in every asthenic case of erysipelas for the last twenty-five years, and has had no deaths. Floeckinger<sup>6</sup> uses a combination treatment of tincture of iodine and ichthyol locally, and antistreptococcus serum and iron internally. Monroe<sup>7</sup> believes in the good effects of cold applications. Franke<sup>8</sup> limits the spread of the disease with ichthyol collodion; the erysipelas never extends beyond the strip.

The list might be extended greatly were anything to be gained thereby. Every writer has his favorite treatment, and, since almost all cases of ordinary erysipelas get well anyhow, each method appears excellent. It is just possible that the cases would have done as well without any specific treatment at all.

In a recent important article Rona<sup>9</sup> throws much needed light on the vexed subject of erysipelas treatment. From January, 1899, to January, 1905, the number of cases that he has treated in the erysipelas division of the St. Stephan's Hospital has been 4215; and with the addition of the cases of 1898 the number exceeds 5000. This is an amount of material far in excess of any other observer with whose records I am familiar; and as the cases were treated in practically every way that has been recommended, and the records carefully kept, the conclusions of this well-known authority are deserving of especial attention, and may be regarded as conclusive.

<sup>1</sup> Therapie der Gegenwart, 1905, No. 12.

<sup>2</sup> Deutsche medizinische Wochenschrift, 1905, No. 31.

<sup>3</sup> South Carolina Practitioner, June, 1905.

<sup>4</sup> Monatshefte f. praktische Dermatologie, February 15, 1906.

<sup>5</sup> Medical Standard, June, 1905.

<sup>6</sup> American Therapist, April, 1905.

<sup>7</sup> New York Medical Journal, July 15, 1905.

<sup>8</sup> Journal of the American Medical Association, December 2, 1905.

<sup>9</sup> Orvosi Hetilap, 1905, No. 25.



Rona's results show, in the first place, that all antiseptic solutions and lotions are entirely inefficacious; they had no appreciable influence on the affection. Attempts to prevent the local spread of the infection by means of plaster strips, rubber bandages, or collodion were equally ineffective. Worthless also were carbolic pastes, wet carbolic or sublimate dressings, irrigation with or without scarification of the apparently healthy surrounding skin, occlusive varnishes, etc. The carbolic injections of Huter, and the sublimate injection and infiltration of the cutis recommended by Kuster gave no results at all. Compresses of absolute alcohol did indeed relieve the subjective symptoms, but they had no effect either on the local progression of the disease or on the fever. The treatment with antidiphtheritic serum, which has been highly recommended by various Russian authorities, though given in large doses (20 to 30 c.c.), had not the slightest effect on the disease. The exclusion of chemical light, negative phototherapy, as it is called, by keeping the patient in a red-room, was of no avail. The Aronson serum as prepared by Schering, as well as large amounts of normal horse serum (400 c.c.), did not improve either the local or the general symptoms. As regards the use of the antistreptococcus serum the author has not yet come to an absolute conclusion; and ichthyol seems to hold its place as an application that at all events does no harm if it does no good.

From the point of view of the clinician these results are sufficiently discouraging. Yet they are essentially in accord with the lessons taught by experience. With all the study that is done every year on this common disease, it is inconceivable that any method of treatment that is really advantageous should not have obtained very general recognition. For the present we can only say that the treatment of erysipelas must be purely symptomatic; that we possess no remedies to influence the disease directly; and that the only possible and not very probable exceptions to this last statement are the use of ichthyol locally and the antistreptococcus serum internally.

**Herpes Zoster.** Zoster is usually regarded as an affection requiring but little treatment. A self-limited affection that runs its course in a number of days or a few weeks, that does not usually entail very great discomfort when present, and that occurs but once in a life-time, does not need elaborate therapeutic methods. I have been accustomed to teach that three measures only were needed: First, protection of the affected area of skin by means of a thick layer of cotton-batting held in place by a bandage; second, relief of the local and neuralgic pains by the use of dusting powders containing a small percentage of eucaine or cocaine, reinforced, if necessary, by a little morphine at night if the subjective symptoms are severe; and third, combating of the systemic infection by full doses of quinine and sodium salicylate. I have had

occasion, however, to see a number of rather exceptionally severe cases of the disease during the last few years, with extensive eruption, in some cases followed by gangrene of the affected skin, marked constitutional symptoms, and severe and persistent subsequent neuralgic affections.

Some new and possibly valuable therapeutic suggestions have appeared during the year. Leale<sup>1</sup> advocates the employment of dry cupping over the ganglia of the posterior nerve roots and the points of emergence of the nerves of the area affected. He claims to have gotten good results from the treatment, stating that it shortens the attacks and relieves the pains. I have not tried it myself, but shall certainly do so in a suitable case. Refrigeration is recommended by Morrow;<sup>2</sup> he uses ethyl chloride, freezing a dollar-sized area of the skin where the nerve end emerges from the spine. This is to be repeated frequently. He has used it in ten cases, and with good results, especially as regards the pain.

Robinson<sup>3</sup> lays out a varied and energetic plan of treatment. Especial attention should be paid to the general nutrition, since the body is the culture medium for the microbe on which the disease very probably depends. He believes also in the employment of cold over the affected ganglia. Local treatment should be aseptic and antiseptic. In the very earliest stages the area involved should be cleansed with soap and water, followed by alcohol, in the usual manner; it is then painted with flexible collodion and covered with antiseptic gauze. Later on, when the vesicles are large and their contents have begun to change color, irritants like soap and water must be avoided, and a boric acid and bismuth subnitrate ointment can be used. Still later ichthyol can be added to the ointment, or an antiparasitic preparation, such as the ointment of ammoniated mercury, employed. For the persistent neuralgias following zoster, anodynes, the faradic current, or the x-ray may be of some value; but the condition is very rebellious to treatment, probably on account of the structural changes in the nerve trunks and spinal ganglia. Tonics, such as phosphide of zinc, arsenic, etc., are also to be recommended.

**Malingering in Dermatology.** In the review of two years ago<sup>4</sup> I recorded two cases of feigned eruption of my own. They are not very uncommon, though the cases recorded are comparatively few, for various reasons. A certain number, occurring as they commonly do, in neurotic and hysterical females, have been regarded as real dermatoses and have been described under such names as atypical or gangrenous zoster, urticaria, or pemphigus, etc., and this by some of the most noted authorities in

<sup>1</sup> New York Medical Journal, August 19, 1905.

<sup>2</sup> Medical Bulletin, May, 1905.

<sup>3</sup> New York Medical Journal, June 17, 1905.

<sup>4</sup> PROGRESSIVE MEDICINE, September, 1904, p. 115.



dermatology. Others have been simply noted as cases of factitious dermatitis. The chief reason, however, for the paucity of the records is the fact that when a marked and perhaps puzzling dermatosis is found to have been artificially produced by the patient, the explanation robs the case of all further interest. As a matter of fact, however, these cases are worthy of note from social and medicolegal as well as from a purely dermatological standpoint.

Heidingsfeld, in a recent article,<sup>1</sup> records six of them. The first of these was in the person of a young girl of fourteen years, in whom the lesions were manifestly excoriations produced by some sharp instrument. The second case occurred in a trained nurse, and the bullous lesions were evidently occasioned by a chemical cauterant. Neither patient would admit the charge of autoinfliction of the lesions. The third case was a young woman, of twenty-two years, with a peculiar rose-red discoloration of the left palm and two similar stripes extending up the flexor aspect of the forearm to the elbow. The patches showed the profuse rose-colored desquamation. Many prominent physicians had seen the case, and in default of other explanation erysipelas or some form of tuberculosis had been suggested as the diagnosis, and amputation of the arm had been advised. The only diagnosis as to disease was chromidrosis or colored sweating; but Heidingsfeld soon made up his mind that the eruption was artificial. Two weeks in the hospital, with the limb in plaster, sufficed to cause the disease to disappear; and the patient finally acknowledged that the lesions had been caused by crude carbolic acid, and the coloration by means of artificial rose petals dipped in water.

In the fourth case, a woman, aged twenty-one years, there had been an inflammation of the upper lip for several years, baffling diagnosis, though epithelioma, lupus, etc., had been suggested. It looked like an ordinary superficial inflammation; it would get well under an ordinary indifferent treatment and then relapse. For six months, though carefully watched, no conclusion was come to. Finally, the patient was accused of producing the lesion herself; and though she would not admit it, immediate and permanent recovery ensued.

The fifth case was of especial interest on account of its unusual character and motive. She was a girl, aged twenty-one years, inmate of a convent, who for two years had been developing many sores, especially on the lower limbs, at intervals confining her to bed. These attacks got well under rest and local treatment, but there were always new ones soon after. There were many superficial abscesses, especially around the knees, and also a large number of indurations, many of them with

<sup>1</sup> The Lancet-Clinic, April 29, 1905.

a slight brownish or bluish discoloration. The affection looked most like a furunculosis; but careful examination revealed a circumscribed hardness, as if from some slender foreign body. Incision of one of them revealed the presence of a needle. The patient was surprised at this and professed entire ignorance of the fact. When several other lesions were opened, and a needle or a headless pin removed from each, she confessed that she had inserted them herself. During the first day at the hospital forty-one of these bodies were removed, and before she left the institution the number had reached seventy-four. She was readmitted to the hospital on many subsequent occasions, and on each of them many needles and pins were extracted. The patient's reason for her self-mutilation was finally elicited. She fancied she had been guilty of some sins, the exact nature of which she would not reveal; and emulating the ancient martyrs, she castigated herself for her fancied shortcomings in this manner.

The last case was complicated by the fact that the patient had syphilis in addition to the adventitious lesions. These latter were bullous, and evidently caused by a chemical caustic. They disappeared whilst the patient was under observation at the Presbyterian Hospital and did not reappear after the patient was informed that their cause was known.

It is important to recognize these cases; failure to do so may entail serious consequences to the patient and her friends. The chief element in the cure, whether the patient confesses or not, is her appreciation of the fact that she has been found out. There are certain characteristic earmarks to them. Young hysterical women are the usual subjects; all Heidingsfeld's six cases belonged to this class. The location of the lesions is peculiar; the more readily accessible portions of the skin are selected, and the back, between the shoulder-blades, which cannot be reached, is always free. The left forearm and the legs are favored in right-handed persons, for obvious reasons. Other characteristics are extreme chronicity, distinct exacerbations and remissions, futility of treatment, and the atypical nature of the lesions. These criteria ought to suffice for a diagnosis, though there will always remain some cases in which a decision will be difficult.

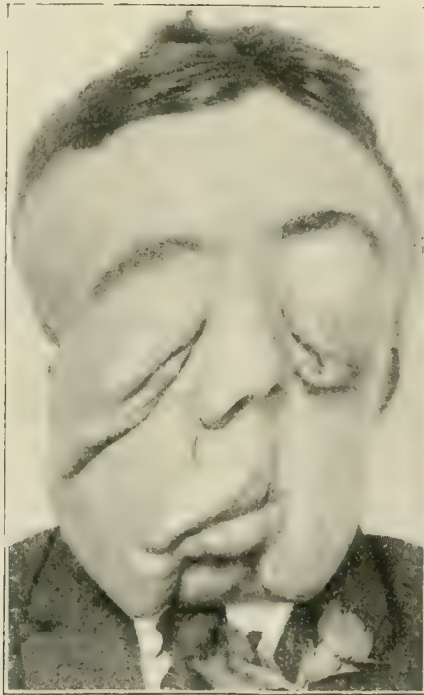
**Neurofibroma.** A remarkable case of this kind has been recorded by Wynn.<sup>1</sup> The patient was a young man, aged nineteen years. Swelling of the eyelids was noticed in infancy, and the deformity had been increasing ever since until it has reached the condition shown in Fig. 7. Tenderness and sensitiveness were early present. At the present time there are palm-sized enlargements over each temporoparietal region, and a similar one over the left mastoid prominence. These growths are hard, tender, firmly attached to the subjacent bones, and involving

<sup>1</sup> Journal of the American Medical Association, February 17, 1906.



the skin. This latter shows a brown, mottled pigmentation, and pea- to hazel-nut sized areas of epidermal thickening, resembling sebaceous warts. The skin hangs in great lobulated folds over the lower jaw and from the orbits on either side (dermatolysis). The lips are enormously thickened; the lower eyelids are everted and granular. Both eyeballs are very hard and atrophied; the remnant of an eyeball is seen at the left inner canthus; none at all is visible on the right side. Hard, irregular, worm-like masses filled the orbital cavities, and the palpebral conjunctiva was for the most part firmly bound down to the subjacent tissues by fibrous adhesions.

FIG. 7



Neurofibroma. (Dr. Wynn.)

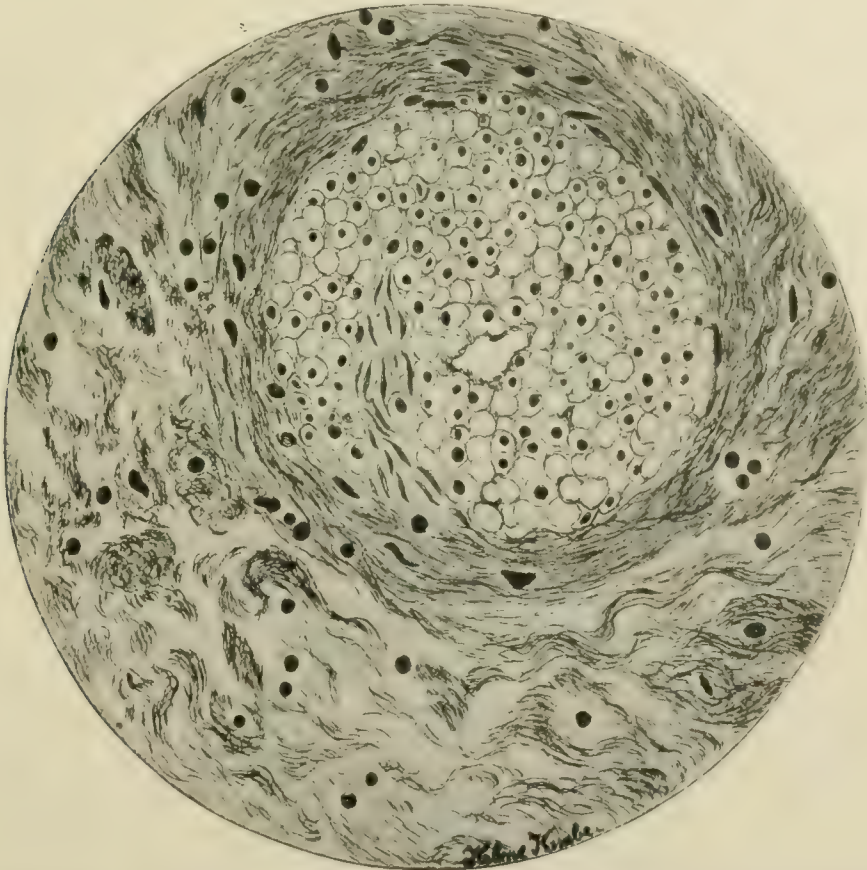
Examination of an excised portion of the tumors showed the mass to be traversed by macroscopically visible white fibrous strands 2 to 6 mm. in diameter. These strands the microscope showed to be composed of fibrous tissue resembling perineurium. The large arteries showed a nodular arteriosclerosis, with thickening of the intima and degeneration of the media. The smaller vessels were surrounded by much fibrous tissue, with some smooth muscle fibres. The white fibrous cords turned out to be degenerated and fibroid vessels; no nerve fibres were found. This seems to confirm the contention of Lahmann and others that the so-called neurofibromata may sometimes arise from the perivascular connective tissue (Fig. 8).

Clinically, the new-growth was a neurofibroma of the skin and subcu-

taneous tissue. This was not probable histologically, but it is quite possible that degeneration of the nerve elements may have progressed so far as to render the detection of their remains impossible.

**Pemphigus.** Though some space was devoted to this subject last year it will not be inappropriate to consider the work of the last twelve months in this very serious affection. It seems to be on the increase here. I formerly saw but one case every year or two; during the last two or three, however, I have encountered four or five every winter.

FIG. 8



Neurofibroma. Fibrous cord and small vessel with subendothelial proliferation.  
(Dr. Wynn.)

Weidenfeld<sup>1</sup> has used the extensive clinical material at Vienna in his researches in the disease, and bases his conclusions on eighteen cases, eight of pemphigus vulgaris, four of pemphigus serpiginosus, five of pemphigus foliaceus, and one of pemphigus vegetans. This is a large number in a comparatively rare disease, though the author admits that some of the cases were only under observation for a few months or weeks. It occurs at all ages; one of these patients was a child of four.

Weidenfeld agrees with the statement that I made last year,<sup>2</sup> based on an unfortunate experience in a number of cases, that the beginning

<sup>1</sup> *Annales de Dermatologie et de Syphiligraphie*, January, 1906.

<sup>2</sup> *PROGRESSIVE MEDICINE*, September, 1905, p. 124.



of the disease in the mouth is of bad prognosis, and heralds the advent of the severest forms of the disease. Perhaps his most important conclusion is one with which I entirely agree, that there are no absolute dividing lines between the different forms of the disease, that in the course of time one variety may be transformed into another, and that the entire disease type is an entity that for practical purposes is best designated as pemphigus, without any qualification at all. The results from the examination of the bullæ were inconclusive, save that it seemed probable that the serum contained a peculiar toxin that possessed the

FIG. 9



Septic pemphigus. (Dr. Crary.)

power, when injected subcutaneously, of provoking the appearance of fresh similar lesions. Weidenfeld concludes that the affection is best treated in exactly the same manner as an ordinary burn; a view that I have always upheld, and the correctness of which explains the efficacy of the permanent water-bath treatment that is in vogue on the Continent.

Crary<sup>1</sup> records a case of acute septic pemphigus occurring in an infant five days after birth. When the first vesicles appeared on the left cheek it was taken to be an impetigo contagiosa, since there had been a case of that disease in an infant in the same ward a few days

<sup>1</sup> Journal of Cutaneous Diseases, January, 1906.

before. But the ordinary treatment for impetigo did not effect any improvement, and no characteristic crusts were formed after the vesicles ruptured, raw denuded surfaces being left behind instead. The flaccid bullæ soon appeared all over the body, and death occurred eighteen days after the first appearance of the lesions. There was an initial rise of temperature to 104° F. two days before the onset of the skin symptoms; it then fell to normal and subnormal and never again went over 103.4° F. (Fig. 9).

The autopsy showed bronchopneumonia, extreme fatty infiltration of the liver, parenchymatous nephritis, and an abscess containing one-half drachm of pus in the partially obliterated left hypogastric artery. Blood cultures from the vessels of the general circulation gave the staphylococcus aureus, from the liver and spleen gave both the aureus and albus, as did the pus from the abscess. The diagnosis of acute septic pemphigus was, therefore, justified.

Farlow<sup>1</sup> records two cases of pemphigus of the mouth, but gives no details of the subsequent histories of the cases. I have seen several cases in the last few years in which the malady began there; and in all of them pemphigus of the general integument finally set in, though it was in some cases months or even a year or two before that occurred. Hamburger and Rubel<sup>2</sup> had a case of pemphigus vegetans in which the malady began in the month of January, 1900; in February, 1901, it had spread over the body, and the patient died in May of that year. Méneau<sup>3</sup> reviews the entire subject of pemphigus of the mucosæ, without, however, adding anything new to our knowledge of the subject.

**Rhinophyma.** Under this designation we understand those excessively deforming enlargements and hypertrophies of the nose which the French call "couperose," copperas, and the Germans "kupfernase," copper nose, and "pfundnase," poundnose, on account of their color and size. It is commonest in the wine countries of the Continent of Europe, where water is not the usual drink; but we see occasional cases here, most commonly in immigrants.

A case has recently been reported by Wende and Bentz<sup>4</sup> in which the enormous protuberance formed a semidetached globular mass that completely overhung the mouth and rested with its lower border on the upper part of the chin; and these authors have gone very thoroughly into the pathology of the affection. Gamberini was not far out of the way when he called it an elephantiasis of the nose, for it is essentially a chronic hypertrophy of the connective tissue of the cutis of the nose, the peri-

<sup>1</sup> Archiv f. Dermatologie, July, 1905, p. 150.

<sup>2</sup> Annales de Dermatologie et de Syphiligraphie, March, 1905, p. 298.

<sup>3</sup> Journal des Maladies Cutanées et Syphilitiques, 1905, No. 1.

<sup>4</sup> Journal of Cutaneous Diseases, October, 1904.



nasal portions of the cheeks, and sometimes also of the lobes of the ears. Besides this, all the vascular structures are greatly changed; arteries, veins, and capillaries are enormously thickened, dilated, and increased in number. The sebaceous glands also are greatly hypertrophied and increased in number; their ducts are dilated, and they pour out a large amount of harder or softer oily secretion. There is in fact a general hypertrophy of all the elements of the affected skin.

The size of the hypertrophied organ varies greatly. The increase may be so slight as hardly to attract attention; and it may be so great as to interfere with deglutition and even with respiration, and to greatly discommode the patient with its weight. The enlargement is generally in three distinct portions or lobes, so far as the nose is concerned, the central one representing the tip and the two lateral ones the two alæ. One or other of these tumors may be more developed than the rest; often the central one is the largest, and it may project well down over the lower lip. The surface of the tumor is usually irregularly nodular, and marked with deep depressions and furrows that partially subdivide it into a number of secondary lobes. The openings of the hypertrophied sebaceous glands are very large and gaping; sometimes they are one or two lines in diameter; and they are usually plugged with inspissated secretion, which may also accumulate on the surface in crusts. Secondary infection of these glands is not uncommon, and small glandular and periglandular abscesses occur. The color of the enlarged nose is red, and it is warm to the touch; or it may be purplish or bluish and cold; dependent on the predominance of arterial or venous overvascularization.

There is a final stage to rhinophyma, which is very rarely seen in this country. After a long time the connective-tissue new-growth contracts, as does all tissue of the kind, and interferes with the capillary circulation, and finally with the blood flow in the larger vessels. The nose becomes paler and paler, till it finally is snow-white. Both the local temperature and the sebaceous secretion diminish until they may be subnormal. The volume of the hypertrophied organ decreases, and to a certain extent the malady in its last stages effects its own cure. This desirable result, however, only occurs after the disease has lasted a great number of years.

As a rule rhinophyma is the end stage or a sequel to rosacea; the patient has this affection with more or less acne and a seborrhœa of the oily or the dry variety for a long time before the hypertrophy sets in. But there are some cases in which there has been no antecedent vascular disease; the affection is a characteristic enlargement from the beginning. I reported a case of the kind some time ago, a picture of the model of which is appended (Fig. 10). Additional evidence that rhinophyma is

FIG. 10



Rhinophyma.



not always a sequel of rosacea is afforded by the fact that whilst rosacea is certainly as common among women as among men, rhinophyma affects the male alone. I do not know of a single female case that has been recorded.

The etiology of the disease is practically that of rosacea. All observers agree that the habitual use of alcoholic liquors is the active and efficient agent in the great majority of cases. And yet it cannot merely be occasioned by the chronic gastritis, anæmia, and nervous debility that is to blame for the ordinary effects of alcoholic over-indulgence. Beer and spirits are much less effective as causative agents of the disease than wines, and especially certain varieties of wines.

Rhinophyma is much rarer in the beer-drinking countries such as England and North Germany, and the countries of the stronger wines, like Hungary and Spain, than in the countries of the lighter Moselle and Rhine wines. These latter, being poor in alcohol, are used as beverages where they are grown to a much greater extent than are the heavy wines, or even the beers. Hebra thought that the tartaric acid and the ethereal oils that these latter contain in abundance were the effective agents in their production of the malady.

Wine is, however, not the only causative agent; exposure to the weather, as in cab drivers and others, and to heat, as in the case of cooks and firemen, must be credited with a certain number of cases. In the case figured of my own, the patient had been a very moderate user of wine, but never drank beer or spirits. He was a candy maker, and had all his life spent long hours every day over the hot fire and steaming pan. Besides this, he was a Frenchman coming from the couperose districts of Alsace, a fact that opens a wide vista for speculation as to the influences of heredity and environment.

The prognosis of the condition must be a guarded one, especially when the cheeks and forehead are also involved, and uncertain rhinoplastic work in diseased tissues has to be done. For ablation, either alone or with the formation of a flap from adjacent parts to fill up, the operative defect is the only remedy. All other treatment, local or general, is only palliative. The only possible exception that I would make to this is the *x*-ray. I am not aware that it has been used in rhinophyma, but it would certainly be worth trying. I have gotten some unexpectedly good results on the external tumors of rhinoscleroma, which is essentially a connective-tissue new-growth occasioned by a specific bacillus, and they might be gotten in rhinophyma.

In one case I operated by removing the entire central pendulous flap, taking away the hypertrophied tissues down to the perichondrium. The incision was a broad elliptical one, extending down to the anterior margin of the alæ on both sides, and to the middle third of the nasal

bones and the columella above and below. The skin covering the sides of the alæ was then dissected off in a moderately thin layer as far as the nasobuccal folds on either side, and the connective-tissue masses beneath the flaps removed. The skin-flaps were carefully trimmed, and their edges united in the middle line with eight catgut sutures. The operation was difficult, and the hemorrhage from the dilated vessels very severe and persistent.

Healing was not satisfactory. The multitudinous infected follicles in the flaps it had, of course, been impossible to render even approximately sterile; suppuration set in, and it took months before the cartilages were covered. At last, under such vigorous measures as scraping twice a week with a sharp curette, followed by the application of pure carbolic acid and a creosote oil dressing, the wound healed.

I believe, if the truth were known, the results of similar operations will be found to have been equally unsatisfactory. The dermatological text-books give no details of these operations; they simply recommend enucleation or ablation. The operations are always done in diseased and infected tissues, and primary union cannot be expected. In another case of the kind I should prefer a regular rhinoplasty, taking the flaps from the forehead or the cheeks if the skin there was normal, and if it was not, using the skin of the arm.

In another respect, also, the results were unsatisfactory. Within a year of the permanent healing the growth of the hypertrophic tissue began again and the organ soon reached its former size. Since the time that has since elapsed the patient has been operated on twice again, and each time by one of the very best surgeons in the city. Each time, I am informed, healing was very prolonged; and at the present moment the deformity is about as marked as it was at the beginning. Simple enucleation or excision cannot be unqualifiedly recommended as a remedy for rhinophyma.

**Ringworm of the Scalp.** Ringworm of the non-hairy skin is a trivial affection, to be cured by almost any antiparasitic application, even by the penny dipped in vinegar, whose use our grandmothers advocated. But when the trichophyton fungus invades the deep-seated shafts and roots of the hair of the head and beard and luxuriates in the subcutaneous cellular tissue, the matter is entirely different. It is rebellious to treatment, and requires very vigorous measures for its eradication. With the most careful attention, and with every facility for handling it properly, it lasts for many months, and often taxes our therapeutic ingenuity to the uttermost. As of necessity handled in most of our dispensaries, it is not too much to say when I affirm that it is often not cured at all. Utterly trivial as it is in children as a disease *per se*, for of course it in no way affects the general health, it assumes great impor-



tance from its social consequences. Affected children should be, and usually are, kept out of school where the careless habits as regards hands, head-gear, etc., natural to children would inevitably spread the infection, and the individual suffers very seriously in order that the community may be protected. They grow up in the streets exposed to all manner of evil influences. They wander from one out-patient department to another, getting better and worse, often for years; and their opportunities have been irrevocably lost when at puberty the affection ceases spontaneously. There are many such cases in every large town; hundreds of them in a city like New York. It is a shame that no steps have been taken even there to provide for the education and treatment of these cases in some manner similar to that so successful in Paris at the Ecole Lailler. Some years ago I made a determined effort to rouse the attention of the educational and health authorities to this matter. Official apathy, however, was sustained by the influence of charitable and settlement workers in one city. These latter apparently believed that any admission of the prevalence of contagious scalp disease in the districts in which they worked was a reflection upon their efforts; they therefore denied the very existence of the conditions complained of, though the daily experience of medical men in the district both public and private, confirmed it abundantly.

It is public institutions, however, in orphan asylums and refuges, that the evils of chronic parasitic scalp disease are most apparent. They all have their cases of chronic ringworm and favus; and in many cases they are regarded as practically incurable. The medical authorities are satisfied if the maladies are kept in check and their epidemic spread prevented. That they are not always successful in the latter direction is well known; and the serious nature of such an outbreak is shown by one that I recorded a short time ago.<sup>1</sup>

The institution was an orphan asylum in which 900 children were housed in quarters sufficient for only about two-thirds of that number. There was a consulting medical board, only called on in case of necessity, and of which Dr. George H. Fox and I were the dermatological members. There was a resident house physician, who was supposed to make regular and careful examinations of the children, and to treat them under the general supervision of the consulting board. There had always been a few inveterate ringworm cases in the hospital ward, and some of these cases had finally been sent to the city institution on Randall's Island for treatment, only to be returned to the asylum after one or more years in practically the same condition.

When the attention of the consulting board was called to the unusual

<sup>1</sup> Medical News, October 17, 1903.

number of cases of scalp disease in the institution, examination revealed the fact that 450 out of the 900 children were already infected. Institution physicians will understand what that means. It nearly led to the revoking of the charter of the institution; houses had to be hired and fitted up as hospitals; many trained nurses and a large staff of internes had to be installed; and the two years during which the epidemic was most virulent occasioned an extra expense to the institution that ran into several tens of thousands of dollars.

Persistent attempts were made during these two years to get definite information as to the comparative value of different methods of treatment instead of mere general impressions as to results. The patients were divided into squads and put on ten different treatments, including the recognized methods and one or two new ones. Careful histories were kept. But the usual difficulties ensued. Frequent changes in the nursing and house staff, incessant transfers of patients from sick to convalescent and observation wards, and confusion of patients and names, deprived the results of the accuracy and definiteness that were desired. The results attained, however, and the conclusions to be drawn from them will be found in the provisional report that I have recorded.<sup>1</sup>

David Walsh,<sup>2</sup> at the recent Congress of Public Health in London, advocated a rather novel method of treatment of ringworm of the scalp in children, during which they can go to school; it seems good, though I know of no one else who has as yet tried it. It is as follows:

1. Shave the scalp, no matter if there is one patch or many.
2. Rub in turpentine, wash with soap and water, and then use a germicide, such as a weak formalin or sulphurous acid solution.
3. Use the *x*-rays for ten minutes; this is not essential; a mild irritant can be used instead (see *infra* for further consideration of this treatment).
4. Paint the scalp with several coats of flexible collodion, with 10 per cent. of salicylic acid added. A few days later apply another coat of collodion, especially if the first one cracks. Strengthen the cap if desirable with rubber solution or glycogelatin or rubber plaster strips.
5. In a few days the cap is raised one-eighth of an inch from the scalp by the hair growth; then strip it off; all the loosened and many of the firm hairs will be carried off with it. If necessary, insert a pair of scissors between the cap and the scalp, and snip off some of the hairs.

This process is to be repeated as often as may be necessary. It is somewhat expensive, on account of the collodion; but a cheaper rubber solution may be used instead. The method has some very good points, especially the one that the infected head is thoroughly closed up, no damage can be done to other children, and the patient can go to school.

<sup>1</sup> Medical News, October 17, 1903.

<sup>2</sup> Journal of the American Medical Association, October 21, 1905.



But it is troublesome, and would take, I should think, at least an hour at each change of the dressing. It is questionable if the partial sealing up of the hypomycetes in their culture ground is desirable. And, finally, the removal of the cap must be troublesome and rather painful. Nevertheless, I think it might be tried in suitable cases.

Ethyl chloride refrigeration has been advocated by Meyer.<sup>1</sup> It is an expensive method where there is more than a single patch; the scalp is very thick and vascular, and a good deal of the fluid is required to freeze it. I have used it in one case without any noticeably good results, and am not in a position to recommend it.

THE X-RAY FOR RINGWORM. Of far greater importance than any mere improvement of existing methods of treating ringworm of the scalp is the plan first proposed and carried out by Saboureaud. This consists in the use of the *x*-ray, not so much for the purpose of getting any supposititious fungicide effect, but for the epilation of the entire affected area, so as to permit the efficient action of bactericide remedies. Though but recently introduced there is sufficient corroborative evidence on hand to warrant the statement that the method is an advance in our means of treating parasitic scalp diseases, and that it deserves full consideration in this review.

Saboureaud's method is based upon a careful irradiation of the affected area, of sufficient intensity to cause falling of the hair and extrusion of the infected shaft with its root sheath and the fungoid masses attached to it. Epilation by radiation has in a general way become more or less discountenanced during the last year or so. The dangers of excessive reaction, of ulceration, of atrophy and sclerotization of the tissues, and even of subsequent malignant changes, have been recognized to be sufficiently great to cause many conservative dermatologists to reject the *x*-ray as a remedy for what is in most cases a rather trivial deformity. The possibility of such results, however, are of less importance on a child's scalp than on a young woman's face; and there seems to be very much less likelihood of their occurring in the former location. Caution, however, is required in this as in all other *x*-ray applications; for whilst there are as yet no recorded ill-effects from the use of the tube in ringworm, and it has been very largely employed for that purpose during the last year, an occurrence such as that noted by Nobl<sup>2</sup> and reported to the Vienna Society of Internal Medicine and Children's Diseases is sufficient to show that the remedy must not be employed recklessly. In Nobl's case a young boy had been exposed to three seances of ten or twelve minutes for a psoriasis of the scalp. A few weeks afterward the hair fell out, and a chronic ulcerative process devel-

<sup>1</sup> Monatshefte f. praktische Dermatologie, February 15, 1906.

<sup>2</sup> Journal des Maladies Cutanées et Syphilitiques, 1905, p. 612.

oped that left the scalp permanently bald, with thin, shining skin, cicatricial and sclerodermic patches, and dilated vessels.

Unfortunately, our methods of *x*-ray dosage are still extremely imperfect; in fact we have no reliable method at all. MacLeod<sup>1</sup> in an excellent article on the technique of *x*-ray epilation for ringworm, says that he uses a "dipper" mercury break, a speed counter to regulate the breaks, and Saboureaud's pastilles as indicators. He employs a tube of definite radiometric penetration (3 to 4 degrees), a spark gap of about 10 centimetres; a current of about 0.4 of a milliampère in the secondary circuit; and about 16,000 interruptions of the primary current. The reliability of these means of regulating the effect of the ray seems to be doubted by *x*-ray workers here, and they confine themselves to the usual criteria of tissue penetration and reactive effect.

The patient's hair is clipped short, and the scalp treated with an antiseptic salve till all scaly and impetiginous conditions are removed; a circle is drawn with a blue pencil one-fourth of an inch around affected areas. The rest of the scalp is protected in the usual manner. Some operators attempt to give the dose required for epilation at a single sitting, but others proceed more cautiously, taking as many as fourteen sessions to produce defluvium. As a rule the instructions are: soft tube, ten minutes time, about ten inches distance from target. Between times washings with bichloride lotions are as good as any remedy that we can apply.

The reports as to the results from the combined *x*-ray and parasiticide treatment are very encouraging. Oram<sup>2</sup> reports over fifty cures without any burns or permanent alopecia. Bunch,<sup>3</sup> Wise,<sup>4</sup> and others also report good results. Most interesting, however, are those of Saboureaud himself at the Paris ringworm school.<sup>5</sup> In the first half of 1903, fifty-seven trichophytosis children were discharged cured; in the first half of 1904, on the other hand, 134 were so discharged, and amongst these there were one hundred that had been ineffectually treated by other methods. The average time of treatment under the new method was three and one-half months, as against eighteen months under the older methods. Daily sessions were given, and defluvium usually set in by the fifteenth day. Renewed hair growth was generally slow, but the new hair contained no parasites.

Results from experimentation on such a scale, and coming from such a source, are certainly worthy of consideration. Those from the Skin

<sup>1</sup> British Medical Journal, July 1, 1905.

<sup>2</sup> Indiana Medical Journal, March 6, 1905.

<sup>3</sup> Lancet, February 18, 1905.

<sup>4</sup> Monatshefte f. praktische Dermatologie, October 15, 1905.

<sup>5</sup> Medical Bulletin, December, 1905.



and Cancer Hospital in New York are not quite so good, but still noteworthy. Favus and ringworm of the beard are maladies suitable for it, and the method certainly deserves extensive trial.

**Trichorrhexis Nodosa.** This rather common affection of the hair, in which a small nodule marking a longitudinal splitting of the hair appears, and is followed by breaking off of the pilous structure, has been known since the middle of the last century, when Wilks described it. Erasmus Wilson, Duhring, and others designated the condition *fragilitas crinium*; but the term heading this article has now obtained very general acceptance.

Heidingsfeld<sup>1</sup> believes that there are at least two conditions included under the designation. True trichorrhexis occurs anywhere on the hairy surfaces of the body, and the nodule and resulting break may show itself quite close to the root of the hair. It is most often seen in the beard and moustache, but occurs also on the female scalp, the pubes, axilla, etc. It is a true pathological process, closely allied to, or identical with, the condition of alternating constrictions and nodosities of the hair known as *monilethrix*, and possibly identical also with the hair affection prevalent in Colombia and called from the hardness of the nodosities *piedra* (stone) by the Spaniards. Besides this there is a physiological trichorrhexis or pseudotrachorrhexis, in which the nodosities and breaking of the hair appear in the hair of the beard or head after it has reached a considerable length. This form of longitudinal splitting of the hair shaft, leaving behind a split, brush-like end, is apparently an unusual but entirely normal mode of termination of the hair growth.

Much study has been devoted to the etiology of the affection. It is undoubtedly mechanical in a certain number of cases, as has been proved by Whitla, Abramovitch, and others. Many investigators, including Hodara, Peterson, Essen, and Spiegler, have endeavored to establish a parasitic cause; but there has been as yet no general acceptance of any one of the various micro-organisms described.

A case occurring in the person of a physician is described by Heidingsfeld. The moustache was the only hair affected. The stubby and irregular hairs showed the characteristic nodules, looking as if two minute whisk brooms had been dovetailed together, and the broken-off ones having the camel's-hair brush splitting. There was no itching or other subjective symptom, and the skin was to all appearance perfectly normal.

The nodosities and frayed ends of the hairs, as well as normal moustache hairs, were stained in various ways and carefully examined. In most of them, irrespective of the presence or absence of nodose lesions, various forms of bacteria, long and short bacilli, large and small cocci,

<sup>1</sup> Journal of Cutaneous Diseases, June, 1905.

isolated and in groups, could be readily distinguished. But most of these were outside the epithelial cells, and nothing definite as to the etiology of the disease was ascertained.

A careful consideration of his own studies as well as of the results obtained by others has led Heidingsfeld to the following conclusions:

1. Trichorrhesis nodosa is both a normal and a pathological process.
2. In long uncut hair it is normal, being probably nature's method of finally limiting the growth of the hair.
3. When present pathologically the nodes are more prominent, often multiple, and separated from one another by intervals of normal shaft.
4. Its etiology has been variously attributed to mechanical, parasitic, and trophic causes.
5. A mechanical cause is improbable on purely clinical grounds, and is incapable of artificial demonstration.
6. A parasitic cause has not yet been demonstrated.
7. The most plausible explanation is that it is due to trophic influences.

**Tuberculosis of the Skin.** The ordinary forms of tuberculous infection of the skin, appearing in the varied phenomena of lupus vulgaris, are common and well known. I am sure, however, that the supposedly rare varieties are of commoner occurrence than is usually supposed, but are not recognized. I desire to call attention to two forms of the disease belonging to this latter category.

The first is the verrucous tuberculosis of the skin, which I have generally found designated as a chronic eczema or some form of keratosis. The case of Oberndorfer's, recorded in last year's review, showed the most frequent form of this affection.<sup>1</sup> A more unusual appearance is that of the case that Shelmire has recently recorded<sup>2</sup> (Figs. 11 and 12).

The patient was a negress of fifteen years, with a good family history. The affection began in her fourth year. The entire surface of the lower jaw was covered with thin scar tissue and a rough, warty growth. There were many dark scabs, and a foul, creamy pus oozed from the interstices of the papillary growth. There were tubercles in the mucosa of the left cheek, and a warty lesion similar to that on the face on the left forearm.

Lesions of this character always arouse a suspicion of the presence of blastomycosis, but the examination by Brooks revealed none of the characteristic organisms. On the other hand there were numerous, small, rounded, non-vascular connective-tissue nodules showing the typical histological features of tuberculosis. They were composed of a fine fibrillated reticulum supporting small round cells, larger epithelioid cells, and very numerous giant cells. The centres of the nodules

<sup>1</sup> Journal of Cutaneous Diseases, January, 1906, p. 20.

<sup>2</sup> PROGRESSIVE MEDICINE, September, 1905, p. 132.



had in many cases undergone more or less extensive coagulation necrosis or caseation. No tubercle bacilli were found.

There was marked improvement under *x*-ray treatment, some sixty sessions of which were given. But the patient was irregular in her attendance, and after a time the warty growth invaded the angle of the mouth, and there was ulceration inside that cavity. She was, therefore, anæsthetized, all the lesions thoroughly curetted, and then cauterized with pure carbolic and nitric acids. This was followed by further radiotherapy. After about one year of treatment the entire facial lesion was replaced by scar tissue, the arm had entirely healed, and there were no active lesions anywhere. She then disappeared, of course not entirely cured.

FIG. 11



Tuberculosis cutis. (Dr. Shelmire's case.)

Reference was made last year to post-exanthematous tubercular infection of the skin, a case of which following varicella has been studied by von Veress.<sup>1</sup> These cases are often called lupus disseminatus, but tuberculosis is a more appropriate designation, since most of them do not show the ordinary signs of lupus vulgaris. The boy, aged six years, had varicella in February, 1903, and the lesions had scabbed over, but had never healed entirely. When examined in May, 1904, there were about fifteen lesions on various parts of the face and body, characteristic lupoid infiltrations. They varied in size from that of a lentil to that of a quarter dollar. They were all excised, with perfect results.

<sup>1</sup> Monatshefte f. praktische Dermatologie, June 1, 1905.

As the result of his studies von Veress holds that post-exanthematic lupus and tuberculosis of the skin is always contracted and spread by external inoculation. He tabulates his conclusions as follows:

1. After acute exanthemata in children, measles, scarlet fever, and chicken-pox, a disseminated tuberculosis of the skin may occur. It may appear during convalescence, but is usually first seen sometime thereafter.

2. All the circumstances and symptoms, such as the multiplicity of the skin lesions, the absence of metastases of the internal organs, the absence of general embolization, and the growth and multiplication of the local lesions, speak for its origin by external inoculation.

FIG. 12



Tuberculosis cutis. (Dr. Shelmire's case.)

3. Histological examination shows that the process begins in the epidermic, superficial layers of the skin, and that deep nodules and participation of the vessels in the beginnings of the process, which would speak for its hæmatogenous origin, are absent.

## SYPHILIS.

**Diagnosis of the Syphilodermata.** "Syphilis or not syphilis? That is the question that is constantly cropping up in practice. . . ." These are the words with which Pernet<sup>1</sup> begins his recent book upon this

<sup>1</sup> The Differential Diagnosis of Syphilitic and Non-syphilitic Affections of the Skin, Adlard, London, 1904.



subject and no words of mine are needed to emphasize the importance of the subject. It would be very convenient if the syphilodermata possessed features that would indubitably distinguish them from non-syphilitic lesions; but such is not the case. They have neither morphological nor clinical pathognomonic features. All their appearances, their color, their predominant localization on the flexor surfaces of the limbs and around the natural orifices of the body, their symmetrical distribution, their circinate appearance, their grouping, their polymorphism, the absence of itching, etc., are encountered also in non-syphilitic eruptions. Yet they do possess features that in their ensemble permit us to differentiate them from these latter; and it may be useful, with Fischkin,<sup>1</sup> to consider them briefly.

It is well to recall three main anatomical facts that characterize every syphilitic lesion of the skin, from the earliest chancre to the latest gumma:

1. They are all cellular infiltrations of the papillary body and the corium, differing only in size.
2. These cells do not tend to become organized connective tissue, but undergo retrograde metamorphosis and involution.
3. The infiltrate invariably spreads and retrogrades centrifugally.

Taking now the various features of the syphilodermata we consider first their—

*Color.* This is not hyperæmic simply, since it does not disappear entirely under pressure; it is due to some as yet undetermined pigment deposit. It is quite inconstant in the syphilodermata. Recent lesions, with much arterial congestion, are bright red, or where the infiltration is minute in size. When there is much cellular infiltration brownish predominates; in anæmic persons the red tint is less distinct; and on the lower extremities it is bluish, from venous stagnation. Hence there is but little reliance to be placed on the much talked of ham or copper color.

*Resistency.* This is quite inconstant, depending on the degree of infiltration of the affected tissues. It is, however, usually fairly well marked.

*Surface.* Usually smooth and shining, from the resistance of the unaltered epidermis to the infiltration; not peculiar to syphilis.

*Localization and Distribution.* The early syphilodermata are symmetrical, but so are many other cutaneous affections. As they appear later and later in the affection they show less and less of this feature, finally losing it entirely, and appearing at points of least resistance or especially exposed to injury.

*Polymorphism.* The multiformity of the specific lesions, and the co-existence of different varieties is more valuable in doubtful cases than the precedent characters. Yet even this is not constantly present, and is seen in non-syphilitic affections.

<sup>1</sup> Journal of the American Medical Association, July 8, 1905.

There being thus no positive physical characteristics which enable us to recognize a syphiloderm, how shall the diagnosis be made? Fortunately there are two factors that enable us to decide beyond peradventure in the great majority of cases. These are:

1. The ensemble, or the general impression made by the whole symptom complex. The value of this is so marked that, to one versed in the disease, the diagnosis in a given case may seem absolutely sure, and its correctness proved by the event, without there being a single symptom or symptom group that can be absolutely claimed for the disease.

2. The chronology of the symptoms. The varied crops of lesions come on in fairly definite sequence, and at intervals. As the disease gets older the individual lesions get larger, their number decreases and the intervals between their appearance get longer.

It will not be out of place to call attention here to a very prevalent error as regards the value of glandular swellings in the diagnosis of syphilis. It is quite common for practitioners to lay stress on the presence or absence of general or local adenopathies in all stages of syphilis, and even to base their diagnosis upon what they find. As a matter of fact gland swellings may or may not be of diagnostic value in the various stages of syphilis, as follows:

Painless wooden swelling of the inguinal lymphatic glands, if of recent appearance, is of some corroborative value in determining the presence of a chancre, and in differentiating it from a chancroid. It may be the remains, however, of antecedent penile lesions of varied nature.

General adenopathy of similar character is a symptom of value in the early stages of the disease as corroborating the diagnosis of constitutional syphilis. The epitrochlears are of no greater value than the others; they are simply more accessible than most of the others; if present alone, and especially if present on one side only, they mean little or nothing. It must not be forgotten that an antecedent felon or other injury to the fingers may leave these glands in a permanently swollen condition.

There is no general adenopathy in old syphilis; there may be a local inflammatory adenopathy in the neighborhood of active tertiary and especially ulcerative lesions, but it differs in no distinctive way from that accompanying other and local inflammatory processes.

It is evident, in view of these facts, that glandular swellings in syphilis have by no means the value that is often ascribed to them in the diagnosis of luetic disease.

**Extirpation of the Chancre.** Taylor<sup>1</sup> in the latest edition of his textbook says: "It can now be stated with positiveness that syphilis cannot be aborted by early cauterization or excision of the chancre nor by the

<sup>1</sup> A Practical Treatise on Genitourinary and Venereal Diseases and Syphilis, 1904, p. 518.



removal of the inguinal ganglia, and that early and energetic mercurial treatment beginning with the appearance of the chancre is powerless to prevent infection of the system." This is the generally accepted opinion of syphilographers to-day, and may pass as a broad statement of a general truth. Yet there seem to be some exceptions to the rule, and I do not believe that the uselessness of the procedure in every case is proven.

Ehlers, Brandes, King, Lesser, Bangs, Matzenauer, and others have advocated the measure under certain circumstances; and Schinkel<sup>1</sup> has recently reported a successful case from the Ghent University Clinic. Brandes claims that excision is useful to transform an infected into a simple wound, and to remove an infective focus. Matzenauer has extirpated twenty-one chancres, and has gotten four complete cures. Even when there has been no success in preventing the advent of constitutional disease, it is claimed that the secondary and tertiary symptoms are milder after the operation. Cozzi, Munn, Rosenthal, and Humbert have all excised lesions with immunity from symptoms of secondary disease for varying periods of observation, in one case extending to two years.

Schinkel's case was that of a man, aged twenty-four years, who had never had a chancre before, and who came to the clinic one month after the appearance of the sore; he had an inflammatory phimosis as a complication. De Cock operated, making as wide an excision as possible, and removing also the inguinal and femoral lymphatic glands and vessels. The wounds healed quickly under a sublimate gauze dressing; and four months later there were no signs of systemic infection.

I have myself in the past advocated non-interference with the initial lesion;<sup>2</sup> but I have found reasons to modify my views on the subject to some extent. I will admit that any radical effect in the way of prevention of systemic infection has but small chance; yet it may be proper to take that chance, even though it may be represented in figures by a small fraction of 1 per cent. And there seems to be some evidence of the possibility of a favorable effect on the course of the constitutional disease. So I do not now absolutely reject chancre excision as a therapeutic measure.

There are, of course, very distinct limitations to the operation. The possibility of benefit is not sufficiently great to justify it where it would entail considerable mutilation, or difficulty in healing. Chancres of the glans, of the urethra, extragenital infections of the lips or fingers, etc., are unsuited for it. Very large or exulcerated scleroses should not be excised. But when the chancrous nodule is of a reasonable size, and when it is seated in loose and redundant tissue like that of the prepuce,

<sup>1</sup> Monatshefte f. praktische Dermatologie, May 1, 1905.

<sup>2</sup> Syphilis; Its Diagnosis and Treatment, 1901, p. 182.

the sheath of the penis, the labia majora or minora, or some more or less indifferent (cosmetically) surface of the body, I would advocate its excision. The operation is a trivial one; the wound usually heals smoothly and quickly; and the resultant scar is less than that likely to be left by the chancre itself. I do not approve of such operations as that of Schinkel mentioned above. When it comes to the removal of the entire inguinal and femoral lymph chain the comparative magnitude of the operation and the sickness and subsequent deformity that it entails is quite disproportionate to the possible benefits that may ensue.

Under the limitations stated, excision of the chancre can only benefit the patient. From a theoretical point of view, the mechanical removal of a large focus of infection is a desirable thing. I have had one case myself in which excision was apparently successful, although it belongs to the class of which it can always be claimed that the diagnosis was not fixed, and the possibility of mistake was present. The patient was a young man who was brought to me by his physician for the diagnosis of a tumor in the loose tissue of the remains of his prepuce, which had been circumcised. All the physical characters of a bean-sized, superficially exulcerated sclerosis were present; the lesion had appeared two weeks before; of other symptoms there was only a fairly marked local adenopathy. My diagnosis, with the necessary reservation, was chancre; it was as characteristic an instance of the lesion as I have ever seen. In accordance with the views that I then held, I advised absolutely against ablation. In four days, however, the patient returned with his physician, his father, and two uncles. The family counsel had decided that the tumor should be ablated, and it was done. Primary union resulted with an almost imperceptible scar. I saw the patient several times thereafter; and with the help of his physician kept track of him for nearly a year. There never was the slightest sign of a systemic infection.

In order to obtain the benefits of ablation it must, of course, be done as early as possible. We cannot, therefore, await the advent of secondary symptoms, and we lose the positiveness in diagnosis that is only to be gotten from seeing them. But a chancre is in most cases a fairly characteristic lesion, at all events to those who are accustomed to see them; and in the vast majority of cases there will be secondary signs anyhow. It is best, to my mind, to give suitable cases the chance, small though it is, of escaping general infection, or at all events improving the local conditions, even at the expense of an occasional mistake in diagnosis and some vitiation of the statistics of the affection.

**Hereditary Syphilis.** In a paper read before the Alumni Association of the City (Charity) Hospital of New York, in January of this year,



R. W. Taylor<sup>1</sup> very ably reviews the subject of hereditary syphilis, and adds some important observations of his own.

Taylor considered the vexed question of the possibility of the transmission of syphilis to the third generation, and besides epitomizing the classical cases of Boeck, Fournier, and others cites two cases of his own. They may be summarized as follows:

Case I. The grandmother infected with syphilis in 1869 had secondary and tertiary lesions of great severity. She was careless of treatment. She was the first genitor. In 1872 this woman gave birth to a girl baby which presented classical heredosyphilitic symptoms. After many vicissitudes this child grew up apparently strong and healthy; she was never infected with acquired syphilis, and having a baby daughter, she became the second genitor. In 1890 this second genitor gave birth to a miserable, weakly girl, atrophic, marantic, with very little strength or vitality, who at birth gave no distinct evidences of hereditary syphilis (third generation), but who in five years developed the true dystrophic symptoms. She showed the Hutchinsonian teeth, keratitis, ear troubles, and osseous swellings. Later on she showed unmistakable evidences of a virulent late syphilitic infection in the shape of characteristic gummatous tumors and ulcers. She is now growing up a victim of infantilism and general atrophy.

All the links necessary to prove the existence of an infection extending over three generations are present in the histories of these three females.

Case II. A healthy woman, married to a man syphilitic two years, contracted syphilis two years later coincidently with the development of pregnancy. She gave birth to a male child that soon after birth was characteristically heredosyphilitic, and later developed typical and indubitable evidences of inherited taint, which showed themselves for several years. He was never infected with acquired syphilis and married a healthy girl. Three years after the marriage of this second genitor the wife gave birth to a thin weakly girl, presenting the appearances of infantilism. At four years many dystrophic symptoms of the bones and joints developed, and were promptly cured by antisymphilitic treatment.

This case also, therefore, was a well-marked instance of the development of the infection through three generations. In the first there was active syphilis; in the second there was virulent heredosyphilis; and in the third there was the dyscrasia with characteristic dystrophic changes.

In spite of the labor that has been bestowed on the subject, our knowledge of heredosyphilis in the second generation is still very meagre. There seem, however, to be two distinct types of the affection. In the

<sup>1</sup> New York Medical Journal, February 3, 1906.

first and commoner the dystrophic lesions above referred to occur. In the second, rarer and more virulent form, the symptoms more closely resemble those of heredosyphilis in the first generation. According to E. Fournier the proportion of the two forms is as one hundred to fourteen.

Some brief account of the symptoms and lesions in these cases of heredosyphilis in the third generation may be of interest. Death without apparent cause is especially prone to occur in these infants. Abortions and miscarriages in adults thus affected are rarer than in heredosyphilis of the first generation, and are not of so much value in diagnosis. As a rule these children do not present any characteristic anomaly for the first six months of life; they may be apparently healthy for from two to five years, and then without appreciable cause they become thin, and their intellectual and physical growth is stunted. Intercurrent affections often mask the syphilis and terminate life.

The dystrophic lesions that these third generation syphilitics may show are as follows: Meningitis and convulsions, dental dystrophies, ophthalmological stigmata, rickets, asymmetrical cranium, keratitis, large globular head, senile aspect, curvature of the long bones, erosions of the teeth, delayed dentition, reduction in size, exostoses, Hutchinson's teeth, delayed walking, iridochoroiditis, infantilism, lack of intellectual development, chronic ear discharges, deafness, microcephalus, chronic headache, neurotic conditions, adenopathies, coryza, and inherited debility. This is Fournier's list, and it may well be criticised as a very indefinite one. Many of the conditions enumerated might result from a multitude of causes other than heredosyphilis; possibly only the Hutchinsonian teeth can be regarded as in any degree pathognomonic. But the coincident appearance of several of them, together with the absence of any other cause for their development, may lead us to suspect the presence of heredosyphilis in the second generation.

**Ocular Syphilis.** Carrow<sup>1</sup> states that of the 243 distinct and dissimilar diseases of the eye seventeen are directly due to syphilis, and many of the others are so largely influenced by its presence that they may be almost said to have the same cause. Beginning with the lids, these structures may be the seat of the primary sore. It may be at the free border or at one of the canthi; the lymphatic glands at the angle of the jaw and in front of the ear, showing the characteristic tumefaction. Chancre has also been seen on the conjunctiva, causing secondarily a distinct syphilitic conjunctivitis.

Heredosyphilis, as is well-known, is the cause of an interstitial keratitis with deposits into the substance of the cornea causing blindness during the active stages of the disease and impaired vision for the rest of life.

<sup>1</sup> Detroit Medical Journal, January, 1906.



Iritis is a common and well-known effect of constitutional syphilis; and the resultant contracted pupil, and the adherence of the membrane to the capsule of the lens frequently baffle the skill of the ophthalmologist and reduce the vision of the patient. Extension of the disease of the iris to the ciliary body on account of their anatomical relations has unfortunate and dangerous consequences on the integrity of the eye; extension of the disease backward involves the choroid, as a result of which we have the varying forms of choroiditis, with impairment of vision in accordance with the exact location of the affection. Syphilis is also set down as one of the causes of glaucoma. Bos affirms that it causes cataract. Nearly all the affections of the vitreous, at least those producing vitreal opacities and subsequent choroidal affections, are caused by syphilis. We also have a syphilitic retinitis as an acquired and a hereditary disease. Primary optic atrophy (and Carrow is convinced that there is an atrophy without a prior optic neuritis) is caused more often by syphilis than by any other affection.

Syphilis is the most frequent etiological factor in those cases of oculomotor paralysis that come under the notice of the ophthalmologist on account of the annoying diplopia and disfiguring strabismus that they occasion. Ophthalmoplegia is also caused by the luetic disease. Caries and necrosis of the bony walls of the orbit occur in late syphilis.

This incomplete list is evidence of the etiological importance of syphilis in affections of the eye. The luetic infection seems to stand in a class by itself as regards the multiplexity and importance of the diseases that it occasions in the eye, as in other organs.

**Syphilis and Longevity.** In the review of 1904<sup>1</sup> I mentioned some conclusions of recent authorities as to the life expectancy of syphilitics, and took exception to some of the rather pessimistic views of investigators who had approached the problem from the life insurance point of view. It is difficult to obtain any decisive information on the subject for various reasons. In the first place some of the after-effects of the luetic contagion occur so remotely that it is in many cases not possible to trace a definite connection between them. Then again the dependence of certain affections, especially of the nervous system, or the infection is still sub judice; and as these diseases are certainly effective life shorteners, the decision of these questions will profoundly modify our ideas on the subject.

In an article in the *Medical Examiner*, Hyde summarizes his conclusions as follows:

1. Inherited syphilis is one of the most fatal of all disorders affecting the human race; and under the most favorable circumstances, and irre-

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1904, p. 143.

spective of abortion and miscarriage, nearly 90 per cent. of children born living and thus affected subsequently die.

2. Acquired infantile syphilis is a very rare but exceedingly manageable disease; probably a large percentage of all infants thus affected survive.

3. Between 80 and 90 per cent. of all adults affected with acquired syphilis escape its gummatous complications.

4. The percentage of patients affected with gummatous syphilis who perish therefrom is not known; but one may doubt if it exceeds one in fifty of the 10 to 15 per cent. of syphilitics who show gummatous complications.

5. The coincidence of syphilis with other diseases probably does not affect life expectancy. The prospect that the patient with acquired syphilis will ever suffer from either struma, tuberculosis, or cancer is exceedingly small.

6. The normal evolution of acquired syphilis in untreated cases in adults is not in the direction of a lethal issue. It is rather in the line of physical degeneration and grave complications due to the involvement of the nervous system and the bones, without affecting the organs essential to the continuance of life.

7. It is unfair to charge an extra risk for the insurance of syphilitic applicants otherwise in sound health and insurable. Any assumed unfavorable longevity prospects due to the infection are more than counterbalanced by the extreme improbability of death from either tuberculosis or cancer.

8. If what precedes has a fair foundation in fact, it follows that the syphilitic applicant for life insurance should be examined with a view not so much to his syphilitic history as to his condition with relation to all the other items making up a satisfactory risk. In other words, if he has a good family history, a sound constitution, excellent habits, and has reached but not passed a satisfactory age, his life expectancy is probably that of other individuals under similar conditions, without added risk on account of his specific infection.

This is a rather radical view, and would not be accepted by the insurance companies, some of which, to my own knowledge, absolutely reject applicants who have had syphilis. It goes, in my opinion, perhaps a little too far. We may tell our patients, for their comfort, that their troubles will have no permanent effect on their health. But from the examiner's viewpoint the infection certainly does not improve the risk. It cannot as yet be accepted as proven that syphilitics are less liable to cancer and tuberculosis than others. I would advocate the view that syphilitics should be taken as are other risks, but at a somewhat increased premium. This is the stand taken by Bramwell, Martin, and others



who have investigated the subject as far as our present knowledge and statistics will allow.

**The Syphilis Spirochæta.** A review of the progress in syphilography during the past year would be manifestly incomplete without some account of the pale spirochæta, an organism that has excited the most wide-spread interest throughout the medical world. Yet the very attention that it has excited makes the task difficult. The volume of literature that has appeared on the subject during the last twelve months is very great. Taking note only of the more important articles, I soon found them mounting up into the scores. Every medical journal in the country has referred to it editorially, and most of them have published papers on the subject. These latter have been, of course, mostly mere restatements of the results of original investigators; but many of them also contain much new matter.

That an organism of some kind was the cause of syphilis has been the accepted medical belief for a number of years; the chief phenomena of the disease have been explainable only upon the hypothesis of the existence of a living etiological factor. And every year of the last thirty has seen some organism confidently proclaimed as the long sought for microbe, to be accepted by perhaps a few enthusiastic investigators, and then to sink into rapid oblivion. In my review of 1904<sup>1</sup> will be found a long list of these. The organism of Schaudinn and Hoffman, however, seems at this present writing to be in a different category. It has been found and accepted by multitudes of observers all over the world; and whilst the absolute demonstration of its specificity is still wanting, there seems to be little doubt that the long sought for organism has at length been found.

Perhaps the best account of the organism, together with much original material on the subject, is to be found in the Carpenter Lecture read before the New York Academy of Medicine, by Flexner,<sup>2</sup> in October last. Using that article, together with the original papers of Schaudinn and Hoffman, Metchnikoff and Roux, Buschke and Fisher, Levaditi, Salmon, and Krause, as bases, the facts so far ascertained are as follows:

The *Spirochæta pallida* is an animal microparasite belonging to the flagellata group; whilst the organism that resembles it most closely, the common spirilla, is of vegetable origin. It is a very fine, corkscrew-like thread, showing numerous closely aggregated curves, three to twelve in number. It is the smallest and finest of the spirochætæ, from 4 to 10 microns in size, and with an average length of 7 microns. It is so thin that its width can only be estimated at less than half a micron. It is provided with slender, hair-like flagellæ. It is motile, either cork-

<sup>1</sup> PROGRESSIVE MEDICINE, September, 1904, p. 140.

<sup>2</sup> Medical News, December 9, 1905.

screw-like in both directions, or sinuous and whip-like. This motility persists for a number of hours in physiological salt solution.

Many of the earlier attempts to demonstrate the parasite in lesions undoubtedly syphilitic failed, to some extent on account of the difficulty of staining it satisfactorily, but chiefly on account of its extreme tenuity. It is so thin that it may be missed even in the minute layer of fluid between the cover-glass and the slide unless the objective be accurately focussed at the exact level of the parasite.

Of the various stains proposed for the spirochæte that of Giemsa has obtained most general acceptance. This stain, as modified by Hirschberg and Bevan,<sup>1</sup> is composed of: azur II-eosin, 3 grams; azur II, 0.8 gram; glycerin (C. P.), 250 c.c.; methyl alcohol, 250 c.c. It can be procured ready made from Grübler. The serum from deep scrapings of the lesions, after the bleeding has stopped, seems most likely to contain the organism. The staining process is as follows:

1. Spread specimen very thinly over the cover-glass; dry in the air.
2. Harden in absolute alcohol from twenty-five to sixty minutes; blot dry with filter paper.
3. Rinse out a drop bottle with absolute alcohol, and prepare the stain in the proportion of one drop to each cubic centimetre of distilled water.
4. Stain with the diluted Giemsa for ten to fifteen minutes.
5. Wash with ordinary water, blot with filter paper, dry, and mount in Canada balsam. Overstained preparations may be differentiated in distilled water for from one to five minutes.

The spirochæta has been found in the most varied lesions of syphilis in almost all its stages. Schaudinn and Hoffman themselves found it in the eruptive lesions, in the tumefied glands, and in the depths of the ulcerated tissues.<sup>2</sup> Buschke and Fischer<sup>3</sup> have demonstrated it in the blood in life, and in the organs of a syphilitic infant. Levaditi<sup>4</sup> found it in the bullæ in two cases of infantile syphilis, as well as in the internal organs. McSweeny<sup>5</sup> obtained it in nine cases of undoubted vulvar and oral syphilis. Fanini<sup>6</sup> examined five cases of primary and secondary syphilis, including chancres, moist papules, condylomata, and mucous patches, and found the organism in all of them.

Babes and Panea<sup>7</sup> and Roux and Metchnikoff<sup>8</sup> in hereditary cases;

<sup>1</sup> Journal of the American Medical Association, October 7, 1905.

<sup>2</sup> Arbeiten aus dem Kaiserlichen Gesundheitsamt, 1905, vol. xxii.; Deutsche med. Wochenschrift, May 4, 1905.

<sup>3</sup> Deutsche med. Wochenschrift, May 18 and 25, 1905.

<sup>4</sup> Compt. rend. de la Société de Biologie, May 20, 1905.

<sup>5</sup> British Medical Journal, June 10, 1905. <sup>6</sup> Medical News, October 7, 1905.

<sup>7</sup> Berliner klin. Wochenschrift, June 13, 1905.

<sup>8</sup> Bulletin de l'Académie de Médecine, May, 1905.



and so also have Risso and Capolina<sup>1</sup> in the lymphatic glands, Reischauer<sup>2</sup> in the liver, lungs, and spleen, Levaditi<sup>3</sup> in the serum of the bullæ, and Hoffman in the liver, spleen, lymphatic glands, and bullous lesions of these cases. On the other hand Reischauer<sup>4</sup> did not find it in the kidneys or the blood or Levaditi<sup>5</sup> in the liver; and Herxheimer and Hubner and Rille and Cocherodt failed to detect it altogether. Negative results, however, are of comparatively little importance in a case like this, as I have elsewhere pointed out. The difficulties in the way of the demonstration of the spirochæta in certain cases are great, and our technique is still imperfect.

The list might be extended almost indefinitely.

There seems to be still some doubt whether the organism is to be found in the tertiary lesions; there have been both positive and negative results. These latter, however, are becoming rarer as time goes on and our methods are becoming simplified and more exact. In any case negative results are of minor importance as compared with positive ones, in view of the difficulty in staining the organism satisfactorily, and seeing it plainly. I have myself seen a pathologist search in vain for an hour through a specimen in which he had previously seen the organism and in which he attempted to demonstrate it again.

Perhaps the most convincing proof of the specific nature of the spirochæta is the fact that Metchnikoff and Roux<sup>6</sup> have found it in the inoculated chancres of apes as well as in the human lesions. In spite, therefore, of the fact that the final and decisive evidence, based on cultures and human inoculation experiments, that the *Spirochæta pallida* is the etiological factor in syphilis, is still wanting, the facts before us are sufficient to indicate with a very great amount of probability that such is the case. The scientific medical interest of the discovery is of course of the very greatest. It does not seem probable, however, that it will be of much clinical value. The difficulties of the microscopic diagnosis of the spirochæta are great; and even with improved and simplified methods its detection will require the highest powers of the microscope and a very careful and skilful technique. On the other hand the clinical criteria of the different phases of syphilis are in general marked and well evident. The immense majority of cases do not admit of doubt to those familiar with the manifestations of the disease; and in the minority of doubtful cases treatment affords a ready and easily applicable test. There will, however, remain a few cases in which the diagnosis remains doubtful, and it may be possible, by means of the

<sup>1</sup> *Riforma Medica*, August 26, 1905.

<sup>2</sup> *Berliner klin. Wochenschrift*, August 24, 1905.

<sup>3</sup> *Compt. rend. de la Société de Biologie*, 1905, p. 243.

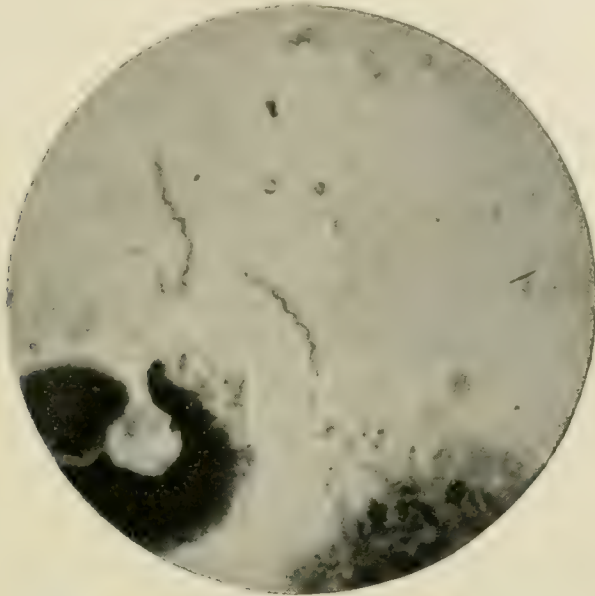
<sup>4</sup> *Loc. cit.*

<sup>6</sup> *Bulletin de l'Académie de Médecine*, May, 1905.

<sup>5</sup> *Loc. cit.*

spirochæta, to detect the presence of constitutional syphilis at a time when there chance to be no clinical manifestations present. I append a photomicrograph of the spirochæta made by Mr. Goldhorn, which I owe to the kindness of Dr. S. Flexner<sup>7</sup>(Fig. 13).

FIG. 13

The *Spirochæta pallida*. (Dr. S. Flexner.)

**Technique of the Injection Treatment.** In spite of the various descriptions of this method in past reviews and in other articles, the inquiries that I receive show very clearly that there are a number of points in connection with it that are not well understood, and require further elucidation. In a general way it has met with approval, its warmest advocates, in fact, being those who have used it most, and in the severest cases. This is true as regards syphilis of the bones, glands and internal organs, of the most obstinate and relapsing manifestations of the infection on the skin and mucosæ, of the earliest and the latest lesions, as well as of the routine treatment of a regular and mild case. There seems still, however, to be some fear or distrust of the method, and some quite unnecessary difficulties in its application. I shall consider the various points seriatim.

In the first place, the fact that the method I advocate is an injection one has caused the treatment to be confounded with the older injections of the soluble mercurials, and especially the bichloride. Save the fact that both are means of introducing mercury into system by means of the hypodermic syringe, there is no resemblance between them. Bichloride injections are painful, and are very liable to be accompanied by salivation, enterocolitis, and other undesirable effects. Being very rapidly absorbed and excreted, it must be administered daily or every other day; a course, therefore, means twenty-five to fifty injections;



a very considerable strain on a patient's patience, time, tissues, and purse. They are very efficacious, of course, but are entirely unsuited for regular treatment in ordinary cases. I reserve their employment for those rare cases in which the luetic process threatens immediate damage or destruction to important parts or vital organs, and where neither the pain of administration, nor the trouble and expense of the treatment, nor the possibility of the occurrence of the complications above mentioned are of importance.

With the insoluble preparations the conditions are entirely different. A depot of the insoluble drug is made in the tissues, from which the salt, slowly converted into a soluble compound, is gradually absorbed. The injections, therefore, need not be given oftener than once in one to three weeks. In rare instances, when the patient's circumstances render it necessary to be especially rapid, I give the injections at intervals of four or five days; it takes that time and more for the mercury to be absorbed. Injections at weekly intervals is the ideal method of treating so chronic an affection as constitutional syphilis. It brings the cost within the reach of the majority of patients whose means are limited; there is no medicine to be forgotten or to betray the fact of treatment to others; the attendant regulates and controls the medication; and the injections come at about the intervals at which a patient with active syphilis should be seen and examined. There is practically no pain from the salicylate injections if properly administered; some slight bruised feeling for a day or two is usually all the patients complain of, and I rarely meet with any objections to the treatment. As compared with inunctions, the insoluble injections are cleanly, time-saving, and easy; they are less liable to show complications than other methods of administration, both the skin and the gastrointestinal tract being spared; they are practically as effective as the bichloride injections, and far more so than the oral or inunction methods; and, certain precautions taken, they are absolutely safe. I have given thousands of these injections during the last few years and can speak on the basis of extended experience.

Another point that seems to be a stumbling block is the injection fluid; this of course, with an insoluble mercurial, is a suspension and not a solution. A sterile watery suspension would of course be the ideal one in many respects, but it is impracticable. The heavy metallic salt cannot be kept in suspension satisfactorily for a sufficient time to permit the injection to be made. Attempts to remedy this by the addition of glycerin, etc., have not been successful; a small amount does not obviate the trouble, and larger proportions make the fluid too irritating. An oily menstruum has to be used; and one of the lighter petroleum oils, such as albolene, is the best. It is of about the right consistency, stable

and not subject to decomposition, and it can be sterilized by the ordinary methods.

Of the various insoluble mercurial salts that have been from time to time employed the salicylate occupies the first place; it is the one employed by almost all who use the method. A few still use calomel; but this salt is not only very liable to be contaminated with traces of sublimate, and so prove irritant, but is also prone to cause salivation and intestinal irritation. Besides this it tends to clump and harden up in the suspension. The salicylate is never irritant; of all the strong mercurials it is the least liable to show undesirable by-effects; and no matter how long the suspension stands, a vigorous shaking up makes it perfect again. It contains 59 per cent. of the metal. A 10 per cent. by weight suspension of the drug in fluid cosmoline or albolene makes an emulsion thin enough to flow readily through the needle; each drop contains one-tenth grain of the salicylate, or about one-twentieth grain of mercury; the average ordinary dose is five to seven drops, which from a mechanical point of view is small enough not to do any serious damage to the muscular tissue into which it is injected.

I described a suitable syringe needle in last year's review; one or two points in connection with them require further explanation. Perhaps the most frequent criticism that I encounter is in regard to the metallic parts of the instrument. A mercurial syringe, I am told, should be entirely made of glass. Undoubtedly this is the case where watery solutions of soluble salts are to be employed. But not, very emphatically, for our oily insoluble suspensions. The entire instrument were best made of metal were it not for the fact that in this as in every other injection into or through the skin, the barrel of the syringe should be transparent so that we can see what we are doing. The suspension itself has absolutely no effect at all upon the metal. I have kept the polished metallic parts of my syringe in the suspension for months without even the slightest tarnishing of the bright surface. In fact, the oil preserves the polished nickel plate, and the mercury suspended in it has no effect on it at all; the salt does not undergo the slightest change. In air alone the metallic surface tarnishes and oxidizes; in the suspension it remains as bright as on the day that it left the factory. The objection is based entirely on the confounding of these suspensions with the watery bichloride injections.

The needles to be employed must be long enough to reach through the skin and subcutaneous tissues even of stout people, so that the injection fluid can be deposited in the depths of the gluteal muscles. It is a mistake, and a source of some of the failures with the method, to make the injection subcutaneously or at a high level in the tissues. For thin flanked individuals with but little subcutaneous fat a three-quarter inch



needle will be long enough; but stout people with thick layers of fat in the subcutis require one over an inch long. I use the antitoxin size, which is long enough and has a lumen large enough for the thick fluid. Where the flanks are well-developed it should be plunged in up to the hilt; in thin persons it is to be introduced less far.

The injection fluid is sterilized once for all; if properly preserved it is not subject to the slightest change. Putting it up in ampullæ has not been successful; the heavy salt requires a thorough shaking up when the bottle is first used, and this cannot be well accomplished with a very small, entirely filled, and delicate glass vessel. I have found no reason for dissatisfaction with the method that I have used for the last five or six years. A number of the ordinary half-ounce vials, with their corks, are boiled and dried. They are then filled with the suspension, plugged with cotton, and stood up in a vessel filled with warm water up to their necks. This water is gradually brought up to the boiling point and kept there for an hour. The plugs are then replaced by the sterilized corks, the bottles tightly closed, and dipped into melted paraffin to seal them. They will then keep indefinitely. When the bottle has once been opened, it is of course to be exposed to the air as little as possible, and to be kept tightly closed when not in use. Where many injections are given the single bottles do not last long. But even when used for long periods the suspension does not undergo change or become contaminated. I have often had half a dozen bottles in use at one and the same time, and can testify to the fact that the last dose taken from a bottle opened months before is just as safe as the first one.

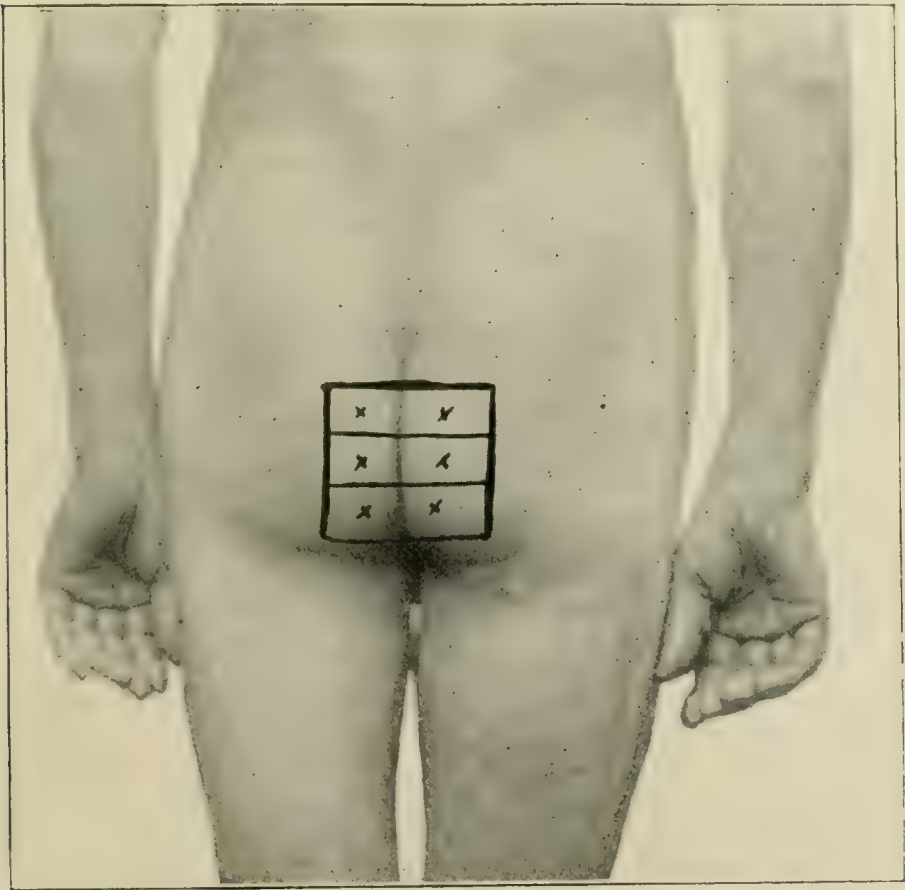
The syringe can be resterilized by removing the oil in it with ether and alcohol, boiling and drying. With a proper instrument, however, this need be done but rarely; and I consider an elaborate and tedious sterilization before each injection entirely unnecessary. The solid piston of the syringe that I employ accurately and entirely fills the barrel lumen when closed; and whatever vacant space there is is filled with a tenuous film of sterile oil. If the instrument is wiped with sterile cotton after use, and kept in a tight box; and if the tip that enters the needle head, the only part of the syringe that is exposed to contamination and comes in contact with the injection fluid, is passed a few times through the alcohol flame before the instrument is used, all the necessary precautions have been observed.

Oxidation from the use of water in the presence of air and heat is the chief cause of the ruin of needles. This does not occur with the oily fluid: in fact the suspension is a preservative. I do not boil my needles before use. I keep a separate one, in an oblong pill box, for each patient. After using it I wipe it with sterile cotton and put it by in its box. Before using it again I pass it a few times through the alcohol flame, not heating

it enough to destroy its temper. I have seen them heated red hot, thus ruining a needle at each sterilization. This is entirely unnecessary. Whatever contamination there is is on the outside of the needle, and a very brief passage through the flame is all that is required to render it safe. Handled in this way, the needles last almost indefinitely. I have employed a single needle in this way for an entire three years' course, and then have resterilized it for another case. The site of injection in the skin is of course to be prepared in the usual way.

As the injection site, I rarely now use any but the gluteal muscles. In some hypersensitive patients the slight feeling of tension and bruised-

FIG. 14



Sites for the mercurial injections.

ness interferes a little with comfort in walking or sitting for a day or two, and I have occasionally employed the interscapular muscles. It is by no means so good a location, however, and the patients themselves ask to return to the buttocks. The precise site selected in these latter is important. It should be in the centre of the gluteal mass, about midway between the intergluteal fold and a line perpendicular to the great trochanter on either side. Near the trochanter there is less muscle mass and more dense fibrous tissue, and the pressure discomforts after



injection are greater. The site to be employed is shown in the accompanying figure (Fig. 14). The area is extensive enough to permit of at least three injections on each side at varying heights; so that it is six to twelve weeks at least before an injection need be given again at any one site. I use alternate sides.

The direction of the puncture should be at right angles to the most prominent part of the gluteotrochanteric mass, and somewhat from within outward in direction. Injecting, as I have often seen done, at right angles to the plane of the side of the buttock, is bad; the suspension is deposited too near the fibrous, bony, and nerve structures. The pain and disability that some observers report after these injections are undoubtedly due to the selection of an improper site.

I invariably give the injections with the patient standing erect, since the gluteal muscles are best massed in this position. The patient cannot see the manipulations, which is an important element in determining the amount of pain that he suffers. Besides this, you have the advantage, in the rare event of having introduced the point of the needle into the lumen of a vein, of deciding without consulting the patient whether to reinsert the needle or not. I almost always do; but it has happened with an especially nervous patient that I have found it advisable to let him go without the dose rather than submit him to renewed puncture at that time.

The injection technique can be summarized as follows:

1. Select and prepare the injection site as above described. Cover it with a pledget of sterile cotton that the patient or a strip of plaster holds in place.

2. Shake up the suspension, flame the needle, fill the syringe, and attach the needle to it. Expel the air from the instrument (I have not found, however, that the injection of an air-bubble does any especial harm).

3. Remove the cotton pledget; thoroughly and rapidly wash the surface with ether (for the local anæsthetic effect).

4. Plunge the needle in quickly up to its hilt.

5. Detach the syringe from the needle, and watch the lumen; if all is safe, and there is no oozing of injection fluid or blood, reapply the syringe, and make the injection very slowly.

6. Withdraw the instrument quickly, and immediately seal the cutaneous orifice with sterile cotton and zinc plaster.

The entire operation should take not more than a minute or two, if everything has been prepared. There is a certain amount of dexterity in manipulation that can only be acquired, of course, by practice; but a little attention to the details here given will enable anyone to perform the manipulation safely and painlessly.

# OBSTETRICS.

By RICHARD C. NORRIS, M.D.

## PREGNANCY.

**Toxæmia of Pregnancy.** The modern aspects of pernicious vomiting, eclampsia, and yellow atrophy of the liver, their relation to one another and to the presence of some toxic element in the blood, were discussed by the New York State Medical Association at their last annual meeting.<sup>1</sup>

In the acid toxæmia of pregnancy there is a great difference in the symptoms from which the patients suffer; some have only a slight nausea without vomiting or headache, others have considerable headache with the nausea, while others may have excessive vomiting.

Between these cases and those in which the symptoms are almost insufferable headache and persistent vomiting there are many varieties. The symptoms are more likely to occur during the early months of pregnancy. In multiparæ the vomiting may be so slight or so little noticed as scarcely to seem abnormal. Neurotic symptoms are often present, and in some instances the patient sleeps well all night and has her trouble during the day. Suspicious symptoms are an accelerated pulse and severe giddiness. The urine is usually scanty and the specific gravity is often high. Usually only a trace of albumin is present, while the amount of solids passed in the urine is below the average. Leucin and tyrosin are occasionally found in the urine and indicate intestinal indigestion. Indican in the urine is the best sign of intestinal intoxication.

The most important part of the treatment is to prevent the development of an acid toxæmia sufficient to cause convulsions. In suspected patients the urine should be examined as often as once in ten days. Many of these toxæmias begin as intestinal intoxications, therefore the bowels must be kept regular and great benefit can be derived from the free use of water. At least three pints of water should be taken daily. Women as a rule do not drink enough water. Drugs are not of much benefit; Swedish exercises and rubbings will be found beneficial, and there is no danger of terminating pregnancy.

Ewing said that the three conditions of pernicious vomiting, eclampsia

<sup>1</sup> Med. News, October 28, 1905.



and acute yellow atrophy of the liver rest on essentially the same basis. This was demonstrated by lantern slides which showed the lesions occurring in these conditions. Hemorrhagic hepatitis is not infrequently a beginning necrotic and fatty degenerative changes follow, which give characteristic details to the microscopic pictures of the more advanced stages.

A failure of oxidation in the system seems to be the cause of these conditions. This can be determined by studying the nitrogen partition in the urine and observing that the nitrogen passed is not in the form of urea, but in various precedents of this substance, the most prominent of which are the ammonia and amide substances. To determine this change in the urine a twenty-four-hour specimen must be taken, and it must be known what the patient has eaten. On a full diet there will be 85 per cent. of urea nitrogen in a normal individual. On a low diet, such as is frequently given in pregnancy on account of nausea, the urea nitrogen may not amount to more than 60 per cent. This must be taken into account in making the urinary examination, and there is no absolute proportion between the changes found in the urine and the extent of the pathological lesions and the clinical symptoms. Leucin and tyrosin are the best indices, usually being found, although they are not invariably present.

For the milder cases of pernicious vomiting the usual remedies must be tried. The intestinal tract must be thoroughly cleaned, and large injections of water may be given and the stomach washed out. If the vomiting persists, however, it takes on the pernicious form, and then the only thing that will end it is the termination of the pregnancy.

There are beginning to be doubts about the applicability of rapid dilatation of the cervix in these cases where the symptoms have affected the general health very much. The shock of the operation itself may kill the patient and the anæsthetic adds to the danger. Chloroform when used seems to add to the toxic process within the body, intensifying it.

All portions of the foetus and placental tissues must be removed or the vomiting will continue. An instance was cited in which a small portion of placenta was left behind and the vomiting continued until it was removed. Gradual dilatation of the cervix may be practised in these cases and it is believed that laminaria tents may again come into use for this purpose. It is also believed that some of the faults which led to their being discarded might be avoided by the aseptic technique of the present day.

The most important element in the treatment of eclampsia is prophylaxis. Women must be taught to consult a physician early in pregnancy and not let suspicious symptoms pass by unheeded. The diet must be

regulated. Veal and pork and all alcoholic beverages must be excluded. Whenever headaches persist or there are swellings or puffiness in any part of the body the physician must be consulted. The physician must pay attention to all the organs and not to the kidneys alone. There must be free and thorough elimination. Calomel is an excellent drug occasionally, and the free drinking of water should be encouraged. Alkali water must be taken freely. Massage is a good remedy.

When a convulsion has taken place the question whether there must be evacuation of the uterus has to be decided. Slow and rapid dilatation are employed according to the urgency of the particular case. Vaginal Cæsarean section was recommended for rapid delivery in those severe cases where the mother is suffering with other complications, such as diseases of the heart and lungs which threaten her life.

THE CHEMISTRY OF TOXÆMIAS IN PREGNANCY. Wolf<sup>1</sup> in discussing this subject, for the sake of convenience, divides the theories which have been advanced to explain the excessive vomiting in pregnancy, and the convulsive seizures which may attend the condition into (1) neurotic, (2) reflex, and (3) toxic. In the efforts to discover the real nature of the toxic agent, Wolf says that a large number of experiments have been performed in the attempt to show that the liver, the placenta, the urine, or the blood of patients dying of pernicious vomiting is toxic to the lower animals, but that the difficulty in accepting experiments of this kind lies in the toxicity which normal extract of tissues of almost any organ have, when introduced into animals. Furthermore, that the individual resistance of animals to these extracts is so diverse as to hopelessly confuse the results obtained. He directs attention to the theory of acidosis, or acid intoxication. For some years it had been assumed that the prime factor in the disorder was a decrease in the capacity of the organism to oxidize; that this failure to oxidize resulted in the production of abnormal acids, acetoacetic acid and oxybutyric acid, and these were actually the toxic agents in the condition. This view did not stand experimental investigation, nor did the view in regard to acetone being the cause of the toxæmia.

Zweifel has attempted to explain the etiology of eclampsia by drawing on another acid, paralactic acid. From blood and urine examinations during eclamptic seizures, he has been able to isolate exceedingly minute quantities of the acid in the form of the zinc salt, and Futh and Lockemann have further professed to be able to demonstrate the presence of lactic acid in the cerebrospinal fluid withdrawn during the attacks. Wolf discusses these observations and has carefully gone into Zweifel's work and also that of his co-workers, and says that it will require

<sup>1</sup> N. Y. Med. Journ., April 21, 1906.



much more convincing arguments on their part to place lactic acid, as the cause of eclampsia, on a basis which will have the support of physiologists.

In order to subject the reasoning on which these observers have based their theory to an accurate analysis, it is necessary to consider the condition of a patient at the time at which the observations are made, and to compare the behavior of a normal person under the same conditions.

A table from Folin's article is quoted. It represents the amounts of urea, ammonia, creatinin, and undetermined quantities of matter, excreted in proportion to the total amount of nitrogen administered to a normal subject. This shows that the total amount of nitrogen excreted in twenty-four hours may be 5 to 6 grams, and with a large intake of fluid that the percentage of urea may be exceedingly small. At the same time, the urine conforms to the picture of a low nitrogen urine in which the proportion of the total nitrogen excreted as urea nitrogen may be 60 per cent. instead of 85 to 90 per cent., as is usually assumed. There is also an increase in the percentage of the total nitrogen excreted as ammonia, creatinin, and undetermined nitrogen. With an extremely low intake of nitrogenous food the ammonia nitrogen may form as much as 10 or even 12 per cent. of the total nitrogen.

The author notes the importance of this table in relation to the attempt made by Williams to base a classification of vomiting in pregnancy on the analysis of the urine. Williams states that in the neurotic type of vomiting the ammonia is low, while in the toxæmic variety the ammonia exceeds 10 per cent., and concludes that when the ammonia nitrogen exceeds this figure the patient is in very great peril.

In refutation of this theory the writer points to the facts shown in Folin's table that perfectly normal individuals may, under change of diet alone, exceed the figure laid down by Williams as a sign of positive danger, and what is of still greater importance in this connection is the behavior of the normal organism in starvation.

All investigators who have examined the metabolism in starving animals have pointed out the increase of the percentage of ammonia under these conditions. Brugsch has recently shown that the amount of ammonia in a normal individual may reach the enormous proportion of 35 per cent. of the total nitrogen by the simple abstention from food. This is the identical condition under which many studies of vomiting in pregnancy and narcosis have been conducted. It is not, therefore, a matter for surprise that observers have, in cases of hyperemesis, found large quantities of reformed ammonia in the urine.

Why, if Williams found large percentages of ammonia in the cases which he considered toxic, were small ammonia coefficients found in the cases which he considered neurotic or non-toxic? According to Wolf it is currently accepted to-day that the source of the acids produced in

starvation are the body fats, not the proteins or carbohydrates. In a patient with an excess of body fats the tendency is toward an elimination of acids with a correspondingly high increase in the ammonia excretion. Subjects poor in body fat live on their proteins, do not produce these acids, and consequently do not produce excessive amounts of ammonia. Thus it would appear that the differentiation given by Williams as the results of his urine analyses might equally well be made by a separation of his patients into those of fatty habit, and those more or less devoid of body fats. The author says that he has supplied this explanation to certain sets of cases with results which indicate the correctness of the theory. This explanation has the foundation of actual analogies in the normal subject observed under strict experimental conditions.

Wolf states that what he has said regarding the significance or non-significance of ammonia in the pernicious vomiting of pregnancy applies with equal force to the use of any of the acetone compounds, acetone, aceto-acetic acid, and  $\beta$ -oxybutyric acid as a means of diagnosis. A table is quoted from Waldvogel to substantiate this statement. In conclusion Wolf states that he considers it futile to attempt to explain the etiology of pernicious vomiting through the medium of acid intoxication; that the attempt is made through an incomplete realization of the normal organism during periods of inanition, and that consequently any attempt to recognize or to diagnosticate degrees of the disorder through an examination of the urine for ammonia, for acetone, aceto-acetic acid, or  $\beta$ -oxybutyric acid is lacking the support of any thoroughly sound physiological experimental groundwork.

CLINICAL MANIFESTATIONS OF THE TOXÆMIA OF PREGNANCY. Edgar<sup>1</sup> reports the results of a year's study of the clinical manifestations of the toxæmia of pregnancy.

He says that the belief is slowly but surely gaining ground that while it is undoubtedly true that various toxæmias may occur in pregnancy, still that a special autotoxic state of pregnancy exists, or rather that the pregnant state predisposes or favors a condition of toxæmia peculiar to the pregnant woman. The writer defines this condition as a state of the blood due to faulty metabolism and possibly arising from hepatic insufficiency. To-day we are practically ignorant of the origin of the poisonous material or materials causing pregnancy toxæmia. Five principal theories have been advanced as to the source of the toxic materials:

1. Nephritic theory (uræmia, kidney insufficiency).
2. Gastrointestinal theory (intestinal intoxication, acid intoxication).
3. Hepatic theory (hepatic insufficiency, hepatic lesions).
4. Ovarian theory (secretion of the ovary).
5. Ovum theory (syncytial, placental).

<sup>1</sup> N. Y. Med. Journ., May 5, 1906.



There is a rapidly growing belief that (a) these toxic substances are metabolic in origin; (b) there is a direct connection between these metabolic changes and the pregnant condition itself; and (c) these toxic substances in the blood are more or less identical in pernicious pregnancy, vomiting, and eclampsia, and that they in some cases at least cause, first, lesions in the liver and subsequently in the kidneys, the kidney changes being secondary in character. The writer says that it is along the lines of faulty metabolism that he has been seeking for the danger signal, the diagnosis of pregnancy toxæmia. The clinical picture of this condition presents high arterial tension, headache, dizziness, gastric disturbances, mental and physical torpor, by disturbances of the bowels, as intestinal toxæmia, of the liver as jaundice, and the skin as pruritus.

The clinical index, that a low output of urea in the urine pointed to an autotoxic state, has proven to be unreliable. Another clinical index has lately been proposed through the original researches of Ewing. This index is based upon the supposition that even mild cases of pregnancy toxæmia cause errors in metabolism *possibly* due to lesions in the liver cells and that as a result metabolism is imperfectly carried out and various unoxidized compounds are formed, which in themselves are poisonous in character. Of these unoxidized compounds replacing the total nitrogen, the most significant at present for danger signals of toxæmia appear to be the ammonia nitrogen and the amino acid or undetermined nitrogen.

Edgar does not believe that as yet sufficient material has been collected to permit us to formulate from the percentages of total nitrogen excreted as urea nitrogen, ammonia and amino acid, or undetermined nitrogen any rule to guide us in the determination of the severity of the pregnancy toxæmia. He believes, however, that this clinical test appears to promise more than any of the previous ones offered.

To formulate such a rule it is necessary to tabulate a large number of urinalyses both of those who do and those who do not show clinical symptoms of toxæmia. This the writer has had done for a year but yet hesitates to formulate rules for a guide to the diagnosis of an impending or existing pregnancy toxæmia. He did find however, that in most of the cases examined in which the clinical picture of a toxic condition was present, such as headache, giddiness, excessive vomiting, slight jaundice, mental and physical torpor, high arterial tension, itching of the skin, etc., the complete chemical examination of a twenty-four-hour specimen of urine showed errors in metabolism.

His study embraces upward of sixty-two chemical analyses in twenty-four patients and extended over a year. Twenty-four-hour specimens were taken, they were examined for the various percentages of the total nitrogen excreted as urea nitrogen, ammonia nitrogen, creatinin nitrogen,

uric acid nitrogen and undetermined or amino acid nitrogen. In addition the reaction and specific gravity were noted, and also the presence or absence of albumin, sugar, indican, urobilin, and casts. In most of the specimens acetone and aceto-acetic acid were sought for, provided the intake of food was sufficient to cover the heat loss.

In his study Edgar divides his cases into four classes, as follows: A. Non-toxic pregnancies. B. Cases of toxæmic vomiting. C. Cases of pre-eclamptic toxæmia. D. Cases of eclamptic toxæmia.

There were eight cases in Class A. and in all these both the clinical symptoms and the chemical analysis were in accord with what can be considered a normal standard.

The following table will show the relation of the nitrogen of the nitrogenous compounds of the urine to the total nitrogen.

				Per cent.
Proportion of total nitrogen excreted	as urea nitrogen	.	.	61.0 to 88.0
"	as ammonia nitrogen	.	.	13.6 to 2.9
"	as creatinin nitrogen	.	.	17.2 to 2.7
"	as uric acid nitrogen	.	.	2.5 to 0.7
"	as undetermined nitrogen	.	.	11.1 to 4.0

In Class B. are included cases of persistent pregnancy vomiting due to some poison of unknown origin and accompanied by symptoms of toxæmia. There were six cases in this class. One failed to show from a chemical analysis of a twenty-four-hour urine, faulty metabolism, although the clinical picture of pregnancy toxæmia was well-marked. Case XIV. of this series was excluded as being a case in which the toxæmia was peculiar to pregnancy. It was apparently intestinal in origin. In four of these cases the proportion of total nitrogen excreted as ammonia nitrogen ranged high, reaching the enormous percentage of 48.4 in Case X.

Case X. Mrs. B., aged twenty-seven years, multipara, moderately fat, admitted August 27, 1905. She had had two living children in normal confinements. Last menstruation December, 1904. From March to July she vomited three or four times a week, but had no headache or other symptom during this time. The latter part of July the nausea and vomiting became persistent, occurring at any time of the day or night, and was accompanied by continual headache and dimness of vision. She also had lancinating pains in the precordial region at this time; there were no pains in the epigastrium or over the liver. Patient had a pulse of 130 on admission, and was very weak requiring immediate stimulation. There were present marked restlessness, hallucinations, and delusions of fear and persecution. An alcoholic history was obtained. A twenty-four-hour specimen of urine showed that the percentage of total nitrogen excreted as ammonia was 48.4, as undetermined nitrogen 28.5, and as uræa 32.9. There was no albumin, sugar, or casts. The enormous ammonia coefficient is possibly accounted for by the fact that



the urine was ammoniacal when received at the laboratory. While treating the case expectantly spontaneous premature labor took place August 31st, and the patient made an uninterrupted recovery.

In Class C. the writer has placed the cases in which the clinical picture of pregnancy toxæmia was present, but persistent vomiting was not a prominent symptom, although appearing intermittently in most of them. In this series there were seven cases. Nineteen urinalyses were made and only in one case did the percentage of total nitrogen excreted as ammonia nitrogen reach as high as 10. The percentage of total nitrogen excreted as undetermined nitrogen ranges high throughout the series. Cases XV., XVI., and XVII. were considered to be toxæmia of the character peculiar to pregnancy, with faulty metabolism, *possibly* of hepatic origin. In cases XVIII., XIX., XX., and XXI., while faulty metabolism was common to most of them, the kidneys appeared to be at fault and they are, therefore, designated as cases of nephritic origin. Case XV. illustrates the pre-eclamptic toxæmia. The patient was a primipara, of medium weight, aged twenty-six years, delivered December 20, 1905. The first analysis of urine made July 24th showed a very high amino-acid proportion, namely 20.4 per cent. There was no albumin, casts, or indican. Examination, August 15th, showed amino-acid 27.12 per cent. for 9.63 grams of nitrogen. Indican was present in moderate quantities. September 28th, showed a nearly normal urine. November 8th, showed a very high nitrogen urine, low urea, and high amino-acid proportions for this amount of nitrogen. No indican was found. December 2d, shows the same character of urine as on November 8th, indicating faulty metabolism. A trace of albumin then appeared for the first time, but no indican. In these five urinalyses the amino-acid nitrogen stands high except in one instance; albumin did not appear until the last month of gestation; casts were never present, and indican only appeared once.

The clinical symptoms of the case were in accord with the chemical analysis. The patient's pregnancy was a stormy and toxæmic one from start to finish. Vomiting was persistent in the second, third, and fourth months, so much so that the interruption of pregnancy was seriously considered. Nausea and vomiting continued only intermittently throughout the last two-thirds of pregnancy. High arterial tension was constantly present, jaundice and itching of the skin were prominent; headache, giddiness, and mental lassitude almost continuous, and frequent pain over the liver area. Calomel was given in doses of four grains, followed by salines to produce free serous evacuations, every week or ten days. It was frequently necessary to resort to a milk diet, colon irrigations, and hot packs to control the toxic symptoms. Persistent high blood pressure, nausea and vomiting, almost constant jaundice, headache and

mental and physical torpor, were prominent clinical symptoms of this case, and the patient's condition in the last two months of pregnancy was, in his opinion constantly bordering upon that of the pre-eclamptic state. January 29th, five weeks after confinement, analysis showed a normal urine. The patient was putting out 11.25 grams of nitrogen per day; the urea nitrogen was 87.1 per cent.; the ammonia nitrogen 2.3 per cent.; and the amino-acid or undetermined nitrogen 6.1 per cent. There was no albumin, sugar, casts, or indican. The symptoms of toxæmia gradually disappeared after labor, but for weeks calomel and colon irrigations were required to control mild toxæmic attacks.

Case XIX. Pre-eclamptic nephritic toxæmia: patient aged twenty-two years, multipara, medium weight. Two years previously, in the ninth month of her first pregnancy she was artificially delivered of a dead baby. In this pregnancy she was not troubled with nausea or vomiting, and remained well until one week before her convulsion, when severe headache and marked œdema of face and extremities occurred. Her convalescence was slow and in the following summer she took a cure at Carlsbad. The albuminuria disappeared but appeared on her return home after an exposure to cold. Since her confinement two years previously she has subsisted largely upon a milk diet. She was pregnant about three months, when she consulted the writer for insomnia and moderate headache and the possibility of her going safely through her pregnancy, as there had been some slight show from time to time. Examination revealed no jaundice or œdema; she had giddiness, insomnia with headache and a very high tension pulse, and her heart, liver, and spleen were normal. A twenty-four-hour specimen of urine indicated a normal nitrogen partition, but with a large albumin reaction (2.15 per cent.), no sugar, a trace of indican, and no casts. The persistence of albuminuria between her pregnancies and the large amount in the present pregnancy; the sudden onset of the headache and œdema in her first pregnancy and the absence of jaundice or other symptoms pointing to the liver in either pregnancy, with the normal metabolism in the last, all point to the kidney as the cause of the headache and insomnia.

The series of Class D. comprises three cases of eclamptic toxæmia. The writer recognizes two varieties of eclampsia: first, an eclampsia of nephritic origin or of renal insufficiency, secondly, an eclampsia which is the natural consequence of a neglected toxæmia of the kind peculiar to pregnancy, and which for need of a better term he calls hepatic.

Case XXIV. of the series illustrates the hepatic variety. Patient aged thirty-five years, octipara, moderately fat, had had four full-term pregnancies and three spontaneous abortions in last eleven years. She gave a moderate alcoholic history. Last menstruation was January 12,



1904. From February 8th she suffered from almost incessant nausea and vomiting until June 1st; some failure of eye-sight and more or less pain in eyes during this time; oedema of feet began in middle of June and she was admitted July 29th. At the same time marked soreness of the epigastric and lumbar regions began and she had frequent attacks of dizziness and constant tendency to drowsiness. Upon admission she gave the history of having had a single convulsion. She was stupid and there was history of headache. Vomiting was moderate; there was epigastric pain and painful eructations. The urine was highly albuminous. The foetal heart could not be heard. Cervix would admit one finger and was hard; the breech presented and membranes were unruptured. The liver was distinctly tender to pressure. The heart was enlarged with aortic second sound accentuated. Pulse 80, small with moderate tension; respirations 24, somewhat labored; lungs normal.

Ophthalmoscopical examination revealed extreme albuminuric retinitis with marked oedema of the disk. A hydrostatic bag was introduced into the uterus, and with the onset of the pains the toxæmic condition became worse. The patient became comatose, the pulse rapidly failing. After labor the patient was in a critical condition for some time, but she rallied under saline transfusion, digitalin, nitroglycerin, and rectal infusion; perspiration was profuse. The first day the pulse was weak, and she had marked pain in the epigastrium; jaundice appeared and disappeared on the third day.

On the fourth day a comatose condition ensued, the patient gradually grew weaker and died on the eleventh day. The autopsy revealed a liver containing numerous anæmic infarcts. About one-half of the organ was thus rendered necrotic. Most of the infarcts were recent; many smaller infarcts showed beginning replacement, fibrosis and contraction. In many of the larger infarcts the cord of necrotic liver cells were quite regular in arrangement, and a remarkable feature was the partial or nearly complete calcification of considerable areas of these cords of necrotic liver cells. The remaining parenchyma of the organ seemed to have adjusted itself to the extensive destruction of tissue, and showed only a certain grade of granular degeneration. Dr. Ewing described the entire lesion as unique in his experience. He thinks the lesions must be regarded in general as infarcts due to occlusion of blood-vessels. The kidneys were the seat of a severe acute exudative and productive nephritis. The tubules were dilated, the lining cells eroded, and lumina filled with albumin. The new cellular tissue was chiefly limited to the medulla and medullary rays where the tubules were considerably compressed. The chemical examination of the liver showed that the fat content was increased, but not markedly so as in phosphorus poisoning.

Edgar concludes by saying that he is not yet ready to formulate conclusions from chemical urinalyses to guide the general practitioner in the diagnosis of pregnancy toxæmia, but that he believes we are beginning to see a great light ahead in the direction of imperfect metabolism as a possible solution of the problems.

**Eclampsia.** Of the various theories of eclampsia, those that attribute to the placenta or to the foetus the origin of the toxins that are now believed to be the cause of this disease have, more than any other theories, influenced the treatment of eclampsia in recent years. The most striking characteristic of the literature of the past year is the rapid improvement and reduced mortality claimed to follow immediate evacuation of the uterus. Zweifel<sup>1</sup> believes he has added confirmation to his theory of lactic acid in the blood as the important factor in the toxæmia. In the blood escaping from the cord of children born of eclamptic mothers he recovered lactic acid in much larger quantities than in the blood of the mothers, and he now considers eclampsia an acid intoxication of foetal origin. Leipmann<sup>2</sup> strongly opposes the foetal origin with some striking arguments and supports the placental origin. He has examined a large number of placentas and found them highly toxic for rabbits while normal placentas are not toxic. He believes the poisonous substance is closely related to the proteids of the placenta, is extremely labile, and up to the present time impossible of isolation.

It has not been proven that every case of eclampsia should be treated by the most rapid methods of emptying the uterus.

Because some clinics claim a large number of recoveries—a death rate of from 1.8 to 5 per cent.—does not prove that all cases, however mild or severe, should receive the most aggressive obstetrical treatment. Rapid emptying of the uterus by vaginal hysterotomy (Dührssen), the Bossi dilator or by rapid manual dilatation certainly are indicated in some cases, but in certain other cases I believe they not only are not necessary but may be harmful. The theories of the etiology of eclampsia being so numerous and varied, and the fact that none are without valid objections when tested by the clinical history of this disease, make it pretty clear that there must be a varied etiology and, therefore, a varied treatment so far as concerns the obstetrical management.

With our present light it would seem desirable to rapidly empty the uterus for those sudden and overwhelming cases that clinically bear the ear-marks of placental or foetal origin. The more slowly developing cases, especially those that have the clinical signs of toxæmia of hepatic, kidney, intestinal or perhaps of thyroid origin, may be averted or successfully treated by the less aggressive obstetric methods.

<sup>1</sup> Münch. med. Woch., 1906, vol. liii. p. 297.

<sup>2</sup> Ibid., 1905, vol. lii. pp. 687 and 2484.



This is especially true of private practice where opportunity is afforded to study the prodromal conditions. The emergency work of hospitals will more often require the rapid methods of delivery because there is no chance for this foreknowledge and the cases of almost overwhelming toxæmia may, from the clinician's viewpoint, call for the most rapid methods of delivery, the attendant wisely using that method which his experience and skill have best qualified him to use in performing a rapid extraction of the foetus.

**THE POISON IN ECLAMPSIA.** Dienst<sup>1</sup> in experiments with placentas obtained from eclamptic patients found that by injecting the umbilical artery or vein with milk the fluid escaped from the large vessels on the maternal surface. He then tested 335 placentas in the same manner, and found that, although he obtained the same result more often than he anticipated, nevertheless the milk was seldom seen to spurt out of the large maternal vessels, except in the case of eclamptic placentas. This test of the permeability of the foetal and maternal circulation was then further supplemented by regularly graduated injections of methylene blue. He injected a few c.c. of the colored solution, at low pressure, into the umbilical artery or vein before separation of the placenta, and directly after the child was born. This was done in 160 cases. In 20 per cent. of these the urine became blue, and after some hours the color disappeared. The author states that the pressure under which he injected the pigment was so slight and so well regulated as to exclude the possibility of violent rupture of chorionic vessels, and to his mind this test proves the power of spontaneous permeability of fluids from the foetal to the maternal circulation in the placental tissue.

The test was applied to the cadaver immediately after death from eclampsia whilst in the second stage of labor. The foetus was removed and the umbilical artery injected with methylene blue; this fluid soon appeared in the uterine and ovarian arteries. This free communication between foetal and maternal circulations in eclamptic patients is demonstrated in another way by the observations of Schmorl, who, from investigations on eighty-three autopsies performed on eclamptic cases, found placental cells most constantly, and in relatively large amount in the lungs, while in the lungs of gravid women who died of intercurrent disease, though placental cells were found, they were not constant, and when present were few in number. Poten and Pels-Leusden have likewise found actual chorionic villi deported into the maternal circulation.

Dienst has also carried out a series of collateral experiments on the question of agglutination and hæmolytic reactions between maternal and foetal blood. The maternal blood was taken from sterilized retro-

<sup>1</sup> Zentralb. f. Gynäkol., 1905, No. 12.

placental hemorrhage during labor, or was obtained by venesection in the puerperium, the latter being mainly from cases of eclampsia and albuminuria. The foetal blood was obtained from the umbilical cord. All specimens of blood were defibrinated and sterile. In twenty-four cases the maternal blood caused agglutination and disintegration of the foetal red corpuscles. Of these twenty-four cases the placentas were impermeable to injection in fifteen, the corresponding fifteen women remained healthy. The urine was normal in color and did not show the presence of albumin. The nine remaining cases gave blue-colored urine in response to injection of the cord with methylene pigment, and the maternal blood acted on that of the foetus like the blood of another species. Of these nine cases, seven were eclamptic and two had albuminuria gravidarum. From this the author infers that albuminuria and eclampsia occur when the maternal and foetal blood behave, the one to the other, as does a mixture made from the blood of two distinct species, and when a free communication exists between the foetal and maternal circulations; a freely circulating mixture of two heterogenous samples of blood gives rise to eclampsia or albuminuria gravidarum. This is the writer's theory of the disease.

Two further cases with albuminuria in the tenth month of pregnancy were venesected and the blood tested with normal blood. It gave in both instances agglutination and hæmolysis. After delivery the maternal blood was tested on the respective foetuses for agglutination, with a positive result; but it is noteworthy that the injection experiment failed to prove abnormal permeability of placental tissue in both these cases.

Dienst mentions the fact that eclamptic symptoms are developed in animals which have been injected with heterogenous blood, and that the clinical picture has been obtained by transfusing a human being with the blood of a lamb. In animals which have been examined after such experiments the autopsies reveal identical pathological lesions. Panum found hemorrhages in the liver of a dog which he had injected with sheeps' blood, although the animal died in less than four hours after the procedure.

A peculiarity was noticed in the agglutination test in all the cases of eclampsia which recovered. At the commencement of the convulsive stage the test failed. On the fourth and fifth days of the puerperium it was strikingly active, and on the seventh and eighth days hæmolysis was marked; in the fatal cases this irregularity was not obtained.<sup>1</sup>

THE PLACENTAL ORIGIN OF ECLAMPSIA. Colorini<sup>2</sup> has made a study of two placentas obtained from eclamptic patients. He deals especially

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, June, 1905.

<sup>2</sup> Annali di Ostet. e Ginecol., April, 1905.



with the presence of syncytial buds in abnormally large numbers. He believes that eclampsia is caused by an excess of internal secretion from these buds. His conclusions are as follows:

1. Eclampsia is the expression of a toxæmia from poisons accumulating by insufficient neutralization or elimination.

2. Primary placental toxins must be distinguished from secondary or accessory toxins of hepatorenal origin.

3. These placental toxins are the cause of the visceral lesions and of the convulsions.

4. These special poisons arise from the internal secretions of the syncytial buds.

5. There is no special placenta characteristic of the eclamptic woman, but the syncytial buds are more abundant, and are more typically developed.

6. These buds may become detached and may be carried as emboli into the maternal organism, where they continue their secretive function.

7. Histologically they are benign neoplasms, but are capable, under special conditions, of developing as vesicular moles or as chorio-epithelioma.

8. Their secretive function depends on their character of neoplasms.

Liepmann<sup>1</sup> presents his latest researches on the placenta covering sixty-seven cases. In all the cases a toxin was present which is not found in normal placentas.

This toxin is believed to be identical with the toxin of eclampsia, for in those cases in which much of the toxin was found in the placenta the maternal eclampsia was less serious and in those cases where there was little of the toxin in the placenta more of it was found circulating in the maternal blood. His results lead him to believe that this toxin is produced in the placenta and that the chorionic villi are concerned in it. The toxin shows a marked affinity for the brain cells. The brain cells are paralyzed by the action of the toxin and neutralize it. The toxin also acts injuriously upon the kidney parenchyma and upon the liver. The liver complication is always secondary to the intoxication. An albuminuria pre-existing would be increased by the intoxication. The treatment in all cases should be immediate delivery.

Diagrams are given comparing the mortality in the expectant and rapid delivery methods of treatment of eclampsia. The expectant treatment at certain clinics gave a mortality of 30 per cent., while the mortality at others has been only 8 per cent., 2.8 per cent., and 1.8 per cent., since the rule has been followed of delivering all eclamptic parturients immediately. Saline infusions and venesection have proven useful in some

<sup>1</sup> Münch. med. Wochenschr., vol. lii., No. 50.

cases and so has Sylvester's method of artificial respiration, kept up for hours when the patients were very comatose and the respirations were shallow. In Bumm's clinic, in a series of seventy-nine cases since April, 1904, the mortality was 1.8 per cent., the lowest of all. None of the women who had less than five attacks died. Others who had as high as ten to thirteen attacks recovered. Efforts are now being made to produce a serum for the treatment of eclampsia.

THE FREEZING POINT AND AMOUNT OF CHLORIDES IN THE BLOOD AND IN THE URINE IN THE PUERPERAL STATE, AND PARTICULARLY IN ECLAMPSIA. Macé and Pierra<sup>1</sup> give the results of an investigation into the freezing point and the amount of chlorides in the urine in four different classes of women.

1. In non-pregnant women (five cases).
2. In normal pregnancies (five cases).
3. In pregnancy with albuminuria (seven cases).
4. In eclampsia (twenty-seven cases).

In the last series of cases the serum of the blood drawn off in the venesections which were usually practised was utilized for the investigation of the same two points. The investigation has been proceeding more than a year and is recorded in a series of tables which cover more than thirty pages. In regard to non-pregnant women the authors confirm the figures arrived at by other investigators, and in consequence feel able to use them for comparison. The pregnant women examined were nearly all at term. They found the volume of urine increased, but the specific gravity remained, on the average, the same as in the non-pregnant state. The mean freezing point was  $1.15^{\circ}$ , as compared to  $1.25^{\circ}$  in the preceding table. The amount of NaCl in a litre was slightly less than in the non-pregnant state, but the amount secreted in twenty-four hours was considerably more, 17.5 to 12.5. These figures indicate great activity of the renal circulation.

In pregnancy with albuminuria the women were examined on six consecutive days. They received on the first three days an ordinary diet, and on the second three days a rigid milk diet. The conclusions reached are that the milk diet lowers the specific gravity of the urine, the molecular concentration, and the amount of chlorides, both per litre and in twenty-four hours. The milk diet moderates the activity of the renal circulation.

The eclamptic cases are divided into two series; the first seventeen received the following treatment: bleeding, subcutaneous injections of normal saline for twenty-four to thirty-six hours, and then a rigid milk diet. The remaining ten were treated as follows: bleeding, abundant saline purgation, intestinal irrigation, and sterilized water only for

<sup>1</sup> Bull. de la Soc. d'Obstet. de Paris, November, 1905.



the first forty-eight hours, when milk was introduced into the diet in small quantities at first, and diluted.

Neither chloroform, chloral, nor morphine were given save in one or two instances, just at the moment of delivery. The authors conclude as follows:

A. *For the Blood.* (The serum was obtained from the bleeding made on entrance to the clinic before any treatment.)

The average freezing point was  $0.61^{\circ}$ , which is considerably more than in normal pregnancy, or non-pregnant women, and corresponds to a renal insufficiency.

The amount of chlorides was in the mean 7.3 for 1000 c.c., which is notably more than the average quantity of NaCl in the blood. There appears, therefore, to be in the majority of cases a pathological retention of chlorides in the serum. In only two cases was a second bleeding practical, and the authors state that it is difficult to base any results on such small numbers, but so far as they go they confirm the view that successive bleedings diminish the molecular concentration of the serum, and the amount of chloride.

B. *For the Urine.* The prognosis in eclampsia is rendered favorable through diuresis, dilution of the urine, and by the equilibrium of the chloride exchanges. From their observations injections of normal saline rendered (1) the volume of urine passed less; (2) the dilution lower; (3) the freezing point was lower and in consequence the molecular concentration greater; and (4) the quantity of chlorides eliminated remained for several days at any rate inferior to that of the chlorides absorbed.

Their final conclusion is that the injection of normal saline solution ought to disappear from the treatment of eclampsia. The milk regime itself appears dangerous because it necessarily carries with it its contingent of chlorides. A pure water diet is to be preferred, and should be established as soon as possible, to facilitate elimination, and by this means to prevent the recurrence of the convulsions.

GANGRENE FOLLOWING ECLAMPSIA. Gutbrod<sup>1</sup> describes a condition of great rarity in a case of gangrene following eclampsia. Only one other such case has been reported, and that by Tate.<sup>2</sup> Gutbrod's patient had fifteen convulsions; during her coma she had repeated hot sweats. When removed from one of these it was noted that opposing skin surfaces gave signs of beginning gangrene. The gangrene was limited to the cutaneous and subcutaneous tissue. On the forty-sixth day the gangrenous surfaces were healed, with the exception of a small area on one foot. On account of abscesses which developed later, it was necessary

<sup>1</sup> Monat. f. Geburts. u. Gynäkol., Band vi., Heft xxi.

<sup>2</sup> American Journal of Obstetrics, April, 1898.

to amputate the leg below the knee. Tate's case had repeated convulsions, and following these a puerperal psychosis developed. On the ninth day she got out of bed and in the evening the temperature suddenly rose. A blue-black spot appeared on the left great toe, and shortly after the leg, as far up as the knee, became a dark-red color. The gangrene was limited in this case as in the other to the cutaneous and subcutaneous tissues. Repair was completed in four months. Gutbrod believes the gangrene is due at least partly to the fact that some of the eclampsia poison is excreted through the skin causing the gangrene. He substantiates this belief by the fact that often eclamptic patients have necrotic areas in various organs, especially the kidney and liver. In conclusion, he believes that a predisposition for the skin to become gangrenous must have existed in both cases, for otherwise gangrene of the skin would be more frequently seen in eclampsia.

**TREATMENT OF ECLAMPSIA.** Longridge<sup>1</sup> reports his special treatment as applied to a woman in the fourth month of her second pregnancy. She had had eclampsia in her first labor and her child was stillborn. The urine was free from albumin, there was no œdema and no symptom of the toxæmia of pregnancy. She had had slight vomiting during the second month. The blood pressure in the right brachial artery was 140 mm. of Hg.

She was admitted to the hospital complaining of headache, slight vomiting and diarrhœa and immediately was seized with a convulsion and became unconscious. Two fits followed in rapid succession, the duration of each being about three minutes. The size of the uterus corresponded to that of a full-time pregnancy, the child was in the L.O.A. position, and foetal heart sounds were audible. The head was well engaged, the cervix was short and admitted two fingers, and the membranes were unruptured. The blood pressure was 160 mm. of Hg, the urine was nearly solid on boiling, and there was some œdema of the feet and legs.

Five grains of calomel and  $\frac{1}{4}$  grain of morphine were given. The calomel was vomited at once and was replaced in about a half an hour by an ounce of oil. She had four more fits between one and three o'clock, when another  $\frac{1}{4}$  grain of morphine was given. At 6.30 A.M. the os was fully dilated, the membranes were ruptured, and the child delivered by forceps.

No attempt was made to check the bleeding and she lost twelve ounces. From 7 to 10.30 A.M. she had six fits. A third injection of morphine was given at 9.30 A.M. From 10.30 to 11.30 A.M. four fits occurred of greater severity and duration than any previous ones. Venesection was

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, December, 1905.



then practised and ten ounces of blood removed; thirty-two ounces of saline solution were then run into the vein. The stomach was washed out, an enema given, and she was kept warmly wrapped up and surrounded by hot-water bottles and occasionally given a few whiffs of chloroform. At 3 P.M. profuse perspiration began and she passed some urine. At 10.40 P.M. the bowels moved freely and the movement was accompanied by a slight fit, which was the last. Subsequent progress was satisfactory and the infant did well.

The day after delivery the alkalinity of the blood was examined by Wright's method and found to be equal to  $\frac{N}{75}$   $H_2SO_4$ , the alkalinity of healthy blood being  $\frac{N}{35}$   $H_2SO_4$ . A mixture containing magnesium sulphate 1 ounce, citrate of soda  $\frac{1}{2}$  drachm, and liquid extract of cascara  $\frac{1}{2}$  drachm, was given every three hours. A pint of saline containing 1 ounce of lactose was injected into the rectum every four hours. Citrate of soda was given to increase the alkalinity of the blood. In two days the alkalinity was brought up to  $\frac{N}{30}$   $H_2SO_4$ . The first estimation of the alkalinity was only made twelve hours after the fits had ceased, and a considerable elimination of toxin had taken place. In another mild case of eclampsia where the patient had four fits the alkalinity was found to be  $\frac{N}{80}$  while the fits were occurring. A third case gave an alkalinity of  $\frac{N}{60}$ . This detail may be an important one as showing that the intoxication is probably an acid one and an indication for the exhibition of alkalies. A citrate was given, as it is absorbed readily into the blood as a carbonate, and so increases the alkalinity. Jardine, a strong advocate of transfusion, has recommended the addition of one drachm of sodium acetate to the pint of normal saline for transfusion, with a view to securing diuresis, and not with the intention of increasing the alkalinity of the blood, but it is possible that his excellent results are partly due to the increased alkalinity produced by this method.

A second detail of treatment rests on a highly theoretical basis. The patient was given considerable quantities of sugar by the mouth and rectum. None appeared in the urine. The patient became markedly jaundiced, showing that the liver had gone through a period of stress, and one imagines that the bile canaliculi became blocked with the debris of the storm, in much the same way that the tubules of the kidney become choked with casts. The liver possesses an antitoxic function which can only be exercised in the presence of glycogen, and the power of the liver to decrease the toxicity of poisons depends directly on the amount of glycogen contained in its cells. The high temperature and the severe muscular exertion in this case were thought to have practically exhausted the glycogenic content of the liver. The sugar was given with the view of increasing it, and so increasing the antitoxic power of the liver. The author has advocated the use of glucose in feeding

typhoid patients on these grounds and his experience led him to regard the results with favor.

Transfusion the author thinks probably saved the life of this patient. How far the two details of the after treatment contributed to the recovery of the patient it is impossible to say, but they appear to rest upon a scientific basis.

*Treatment of Puerperal Eclampsia by Large Doses of Morphine.* Roger de la Harpe<sup>1</sup> reports the statistics from the Rotunda Hospital, Dublin, for the past thirteen years or since the introduction of morphine as the treatment of puerperal eclampsia in that institution. Morphine was introduced in 1892 by Sir William Smyly as recommended by Veit. With the exception of the transitional year of 1892-1893, when chloral and chloroform were added to the treatment, Veit's treatment has been rigorously employed. It has been amplified recently by new measures suggested by the theories of toxæmia.

The main objects of the treatment the writer describes as: (1) the arrest of the fits; (2) the elimination of the septic toxins of eclampsia from the system; (3) the placing of the patient in the best possible position for the avoidance of pulmonary complications; (4) the surveillance of the conditions of the heart, lungs, and kidneys, and the stimulation of these organs when necessary.

Induction of labor is never performed, nor is labor counted on in this treatment. It is believed that manipulation of the cervix reacts on the supersensitive reflex and precipitates the convulsions, and that such manipulations increase the risk of sepsis, to which the eclamptic is peculiarly liable. In only exceptional cases is the application of forceps permissible when the head is at the vulva.

In detail the treatment is as follows: Half a grain of morphine is given hypodermically, and repeated if necessary, in a dose of  $\frac{1}{4}$  grain every two hours up to a maximum total of 2 grains in twenty-four hours. When possible large quantities of water are given to drink, but when this is impossible or dangerous by a semi- or wholly comatose condition, or by intractability of the patient, the fluid is given by a stomach tube. In this manner the stomach is washed out with three to four pints of hot water. Half a pint of hot water is left in the stomach, and to this are added through the tube two ounces of castor oil and three to four drops of croton oil. The patient is immediately placed upon the side, a long tube passed high up into the bowel, which is flushed with soapy water. This flushing is persisted in as long as any fecal matter is returned and a pint of saline solution is left in the bowel.

The patient is placed on her side, covered with warm blankets, and

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, February, 1906.



with poultices about her loins (to alleviate the kidney congestion), taking care not to make the poultices too hot, as it would be dangerous in the condition of lowered vitality of the tissues of the eclamptic state.

When the patient is comatose it is very important to prevent the entrance of any fluid or foreign bodies into the trachea, thus causing pulmonary œdema and its consequences. The patient must be kept continuously on her side; absolutely no nourishment must be given by the mouth, and her head must be turned to the side to facilitate the flow of mucus from the mouth. The writer emphasizes the point that a gag must not be used, as swallowing is impossible unless the jaws can be apposed.

The heart is sustained by hypodermic injections of digitalis when the pulse becomes feeble and rapid, and the respiration by injections of atropine when it becomes slow and sighing. Saline infusions are used in very serious cases, and, in cases of plethora, phlebotomy, preceding the saline infusion is practised.

Stress is placed upon the importance of thoroughly washing out the intestinal canal. The author admits that morphine may have a deleterious effect upon the respiration of the mother, but claims that it has none on the maternal kidney action. Again, as regards the child, he believes that it will be generally admitted that the administration of morphine cannot add, to any appreciable extent, to the immense danger already existing from the presence of the eclamptic poison.

The treatment should be begun in the earliest stage possible, as the majority of deaths the writer has seen under this treatment were those of patients who came into the hospital moribund.

Mortality figures of various authors are compared with those of the Rotunda Hospital. Herman reports a mortality of 20 per cent.; Williams, 20 to 25 per cent.; Edgar, 25 to 35 per cent. The mortality in the Rotunda during the years 1889–1892, before the introduction of Veit's treatment, was 35.3 per cent. The present mortality is 16.9 per cent., a reduction of more than 50 per cent. From November 1, 1892, to November 1, 1905, there occurred seventy cases of eclampsia in 47,924 deliveries, an average of 0.146 per cent. The writer believes that these figures will convince one that there is sufficient ground to base an argument in favor of this method of treatment.

**Treatment of Hyperemesis Gravidarum.** Uhle<sup>1</sup> discusses the treatment of this condition and says that there seems to be but one point in this subject upon which authorities agree, and that is in grave cases the proper treatment is the interruption of pregnancy. The etiology is an unsettled question and is ascribed by different authorities to different organs in

<sup>1</sup> Centralbl. f. Gynäkol., June, 1905, No. 24.

the body. Dirmoser claims that excessive vomiting is due to an intestinal intoxication; Wanchope holds that the primal factor is the retention of the toxins of pregnancy; Kaltenbach thinks the cause is an hysteria; Behm contends that intoxication is produced by the ovosac, possibly syncytial in character; Ziegenspeck believes that an inflammation in and about the uterus is the main consideration; Müller believes that the vomiting is due to an irritation of the sympathetic nerves; Tuszkai believes the cause is due to the production of an anæmia and irritation of the perimetria from a stretching of the uterus; Evans thinks that the contractions of the uterus reflexly produce nausea, and their accentuation to a true hyperemesis.

Uhle reports a case which in spite of gastric lavage, absolute rest of the stomach, rectal alimentation, and subcutaneous injections of morphine the vomiting persisted. The pregnancy had advanced to the tenth or twelfth week. Emaciation had been progressive. A sharp ante flexion of the uterus was present and it was thought this might have a bearing on the cause. A colpeurynter was placed in the vagina and moderately filled to correct the abnormal uterine position. There was a cessation of the vomiting at once. Some hours later it appeared as though labor had set in and the bag was removed. The following day an examination revealed the apparent fact that an abortion was in progress. The pains stopped and vomiting began again. The colpeurynter was again introduced, with beneficial results. A healthy child was born at full term. Uhle maintains that there were no hysterical stigmata about the case and that the result was not due to suggestion but was the direct effect of the method used.

**DIETETIC TREATMENT OF THE VOMITING OF PREGNANCY.** Kolpinski<sup>1</sup> says that this form of vomiting which may appear in the first, second, or succeeding months, and is characterized by all food and drink being ejected as soon as swallowed, with monotonous regularity. Nausea alternates with vomiting, both are increased by motion, and anorexia is followed by aversion to food aggravated by the sight, smell, or taste thereof. Ptyalism torments the patient and rapid debility and marked emaciation appear. The breath is foetid, the thirst is acute, and there is epigastric and presternal pain. Constipation is the rule. The vomited matter consists of food, saliva, gastric mucus, and, from the force of its ejection, bile and streaks of blood. These symptoms continue and their force increases in the second stage, which is that of low variable fever and a pulse rate of 140. There are greater restlessness and sleeplessness, a greater thirst and feebleness. The urine is dark colored and scanty and contains albumin or granular debris. Then comes the third and final

<sup>1</sup> New York Medical Journal, June 9, 1906



stage of cessation of vomiting, but with no betterment of feelings or appearance, with spontaneous expulsion of a dead conception, with increasing fever and feebleness of pulse, with a typhoid state in all its helplessness, with syncope, hallucinations, delirium, and stupor and coma, followed by death.

The fatal course terminates in two or three months. During the first or second stage the vomiting and the disease may be arrested temporarily or entirely in different ways: by treatment, by a nervous shock, by mental excitement, by abortion. When the arrest is temporary it is but the lull in a storm which will begin again with greater force. Pernicious vomiting is estimated to have a natural mortality of 57 per cent., under treatment, 39 per cent. For precision of diagnosis and propriety of treatment the vomiting of pregnancy should be considered pernicious whenever wasting of the body and weakness have become so great as to prevent the patient from leaving her bed. The different modes of treatment that have been commended have varied with the views of pathology, and the entirely different means and great variety of medicine prove that different factors and states may influence the disease and accompany its intensity, or oppose it, its course and its cure. The writer's observations have led him to discard the ordinary methods of treatment and to attempt a plan of diet with substances limited in number and of such physical structure, that, through their density and heaviness, ejection from the stomach was well-nigh impossible.

The dietetics of pernicious vomiting have been overlooked or treated in a perfunctory manner without due deliberation. Of proper foods, pork, ham, or bacon are first and best. A woman so ill as to be confined to bed will find to her intense astonishment that the emesis does not occur after a breakfast of fried ham or bacon, that partaking of other solids improves her condition, and that she is able to be up again. The chief factor in producing this quiet is the stable tone given to the distressed viscus, much like the action of ballast upon a vessel in troubled waters. The co-operation of the patient is helpful, due to new confidence and assurance and the knowledge that she ought in the nature of things, to recover her health in the absence of more dangerous disease. Following the daily breakfast of pork in some form, with cocoa, chocolate, and corn bread, a dinner of beefsteak, roast or corned beef with rice, potatoes, spinach, cauliflower, kale, or turnips is offered. Fish, game, fowl, and cheese may be suggested and may help to complete the evening meal. Foods which induce vomiting are water taken freely, milk, tea, coffee, soups, and all kinds of fluids, neutral, acid, and saccharine, custards, eggs, toast, and fruit. The most unstable combination of a diet is toast, eggs, and sweetened tea, things which the stomach of no gravid woman will tolerate in the early months. It is safe to gratify the patient's long-

ings and especially so if they be for solid food. Pork should be the first food taken each day, though there is no objection to its being taken more than once. The self-selected regimen in one case the writer mentions was boiled ham twice a day for more than two months.

The writer has used this dietetic treatment in two cases of pernicious vomiting with success, and also in vomiting of the ordinary variety, and believes it worthy of trial. It hastens the progress of the case in its development or ending, excludes by success or failure the possibility of other diseases simulating this condition or causing an error in diagnosis. There is ample time to comprehend and treat the patient if a cure is not obtained.

**The Internal Secretion of the Ovary and Placenta.** Halban<sup>1</sup> states that the changes in the mamma incident to puberty are dependent upon material elaborated in the ovary. The menstrual changes in the breast are likewise caused by a chemical substance obtained from the ovary. During pregnancy the ovaries are not the trophic centre of the internal genitalia and the breast, as at other times they appear to be. In pregnancy the trophic influence of the ovaries is insignificant. The ovaries have no influence upon the hypertrophy of mammary tissue, and on the milk secretion which occur during pregnancy. The breasts develop and secrete milk after complete castration performed in the gestation period. The ovum is independent of the pregnancy reaction. The active pregnancy substances are the products of the placenta, *i. e.*, of the trophoblast or chorionic epithelium.

The changes in the breasts accompanying gestation are the result of the effects produced by these substances derived from the trophoblast. Both placental (trophoblastic) and ovarian substances have the common property of exciting hyperemia and hemorrhage. The action of the two substances is analogous, but the effect of that derived from the trophoblast is more intense.

During pregnancy the placenta has a powerful protective influence on the ovary. Neither at birth nor in the puerperium does the influence of the uterus come into question, since the milk secretion is established whether the uterus is present or not. The secretion of milk cannot be brought about by nervous stimuli. The secretion of milk is not produced by suckling, the latter act only promotes and maintains an already existing secretion. The act of labor as such is not to be regarded as the cause of milk secretion. Puerperal involution is nothing but a true atrophy—a physiological process consequent upon the shedding of the placenta.

**The Therapeutics of Retroversion of the Gravid Uterus.** Rizzatti<sup>2</sup> describes the method of treatment used in the clinic of Fabbri at Modena,

<sup>1</sup> Archiv f. Gynäkol., Band lxxv., Heft 2.

<sup>2</sup> Annal di Ostet. e Ginecol., November, 1905.



with details of six cases and a discussion of the literature. Whenever a woman is found to have a retroverted or retroflexed uterus in the early months of pregnancy, attempts are at once made to replace the uterus whether there be symptoms or not. The author has never seen abortion follow, even though it had previously threatened; nor in the literature of the subject has he found that it has occurred except in rare cases where the abortion had already begun.

According to Bossi abortion is a much more frequent termination of gravid retroversion than is spontaneous reposition, though the contrary is commonly held. Still, the indication for replacement of the uterus is more urgent when symptoms of incarceration have already appeared. The writer considers the dangers of mother and child too pressing to allow of temporizing, though many authorities still advocate expectant treatment. The author, however, admits that fatal cases are found mostly in the older records. He has found several cases which do not bear out the opinion of Chrobak that retroflexion is more likely to be spontaneously reduced than retroversion, as he has details of several cases where the woman died with that lesion. He finds, also, cases of retroflexion in which abortion took place without symptoms of incarceration. He, therefore, concludes that the angle of flexion of cervix and fundus is no guide to expectant treatment.

The obstacles to the reposition of a non-adherent uterus are three: gravity, friction, and more particularly negative pressure below. In attention to this factor lies the essential part of Fabbri's method. The author maintains that the success attending the use of air or water-bags is due to the remedying of this obstacle. He further holds that in non-gravid retroversions this negative pressure is often a hindrance to reposition. The author also maintains that any good results following Cazeaux's method of passing a catheter past the uterus to evacuate gas from the intestine above the uterus are due to the catheter permitting the air to enter the rectum. This, in short, is Fabbri's method: with the patient in the knee-chest position a catheter is passed into the rectum; injection of air is rarely necessary, and with one or two fingers in the rectum pressure is made on the fundus while traction with a forceps is made on the cervix. In many cases the simple entrance of air into the rectum, with the patient in the knee-chest position, is all that is necessary.

**A Source of Hemorrhage in Tubal Pregnancy.** Goffe<sup>1</sup> discusses those puzzling cases of extrauterine pregnancy in which at the time of operation hemorrhage is found in the abdominal cavity, and neither careful macroscopic nor microscopic examination reveals the source of it or any trace of the products of conception. It has been discovered that certain tissues possess the property of attacking and destroying other

<sup>1</sup> Journal of the American Medical Association, November 4, 1905.

tissues. This faculty consists in a process of digestion and is supposed to be chemical in character, from which the tissue itself does not suffer, but which will destroy other tissues with which it comes in contact.

Certain young tissues of the embryo possess this faculty, and, while it has not been absolutely demonstrated that the human embryo possesses it, the observations on the embryos of lower animals lead to that conclusion. Minot has observed that in the process of implantation the ectoderm of the chorion undergoes a peculiar proliferation, by which its cells become much more numerous. Some of the cells rapidly assume a distinctive character and are easily recognized by their large size. This layer Minot calls the trophoderm. Wherever these modified ectodermic cells come in contact with the walls of the uterus, destructive changes go on in the uterine tissue, producing a cavity in which the ovum lodges itself. The trophoderm then undergoes a hypertrophic degeneration, producing a series of irregular spaces which persist and become the intervillous spaces of the placenta. Papillary outgrowths of the chorionic mesoderm meanwhile penetrate the trophoderm, initiating the formation of the chorionic villi.

The effect of this corrosive action may be readily conceived in cases in which the implantation of the ovum is transferred from the uterus to the thin-walled Fallopian tube. In most instances the implantation is successfully accomplished, but there are frequent instances in which the corroding process extends completely through the wall of the tube, or may bring the intervillous spaces so near to the surface that the blood pressure bursts the peritoneum and occasions severe hemorrhage.

A case is cited in which such a condition occurred. The symptoms and history pointed to extrauterine pregnancy, and as the patient went into collapse after examination, she was operated on the following day. A vaginal incision was made and much clotted and fresh blood escaped. On examination a small pin-hole opening was found on the posterior surface of the middle third of the right tube, the tube was removed and the cul-de-sac drained. On examination the interior of the tube gave no indication of the development of a placenta or of chorionic villi. The ovum in this case must have eroded its way through the tube and hemorrhages must have been frequent if not continuous.

Zweifel cites a case in which the hemorrhage occurred eight days after the first omission of the menses. At that stage the ovum could not rupture the tube and examination disclosed that the ovum had eroded clear through the tube and serosa into the peritoneal cavity. Whether the hemorrhage is moderate or sufficient to endanger life is a mere chance. Temperature may or may not be present in these cases depending upon the promptness with which medical aid is sought. It would seem to be a fair inference that when a woman has skipped one menstrual period



and is attacked with sharp pain in the hypogastrium, collapse and vomiting, with a very feeble pulse, if there be no rise of temperature, an erosion through the walls of a gravid tube should be suspected at once and prompt operation considered.

**Structural Anomalies of the Placenta in Undeveloped Uteri and their Results.** Schaeffer<sup>1</sup> remarks that no systematic research has hitherto been carried out on the question of placental peculiarities in "hypoplasia uteri." The writer believes that "hypoplasia uteri" is commoner among those who dwell in cities and towns than among those who dwell in the country. Clinical and pathological investigations have taught the author that undersized uteri, by reason of the structure of their mucous membrane, also of the arrangement of their vascular system, offer very unsatisfactory conditions for the completion of normal placentation. In these cases the placental development may remain quite embryonic, giving the placenta membranacea, or partly so, and resulting in the separation of chorionic masses, *i. e.*, it corresponds in structure to that of a pathological abortion. Schaeffer has observed these histological peculiarities in these placentas. The decidua serotina is thin, the stratum spongiosum being defective (primary atrophic endometrium). In another group (where there has been primary glandular hypertrophy with cystic endometrium) the serotina is so loosely constructed as to lead to early bleeding, death of the ovum, and consequent abortion; there appears to be an intermediate primary condition of the mucosa, which, whilst leading to some hemorrhage and partial necrosis in the subsequently formed decidual tissue, still allows the gestation to proceed to the later months or to term, but then leads to anomalies in placental separation and the retention of chorionic villi, or even to *retentio ovi abortivi* (missed abortion?).

Retention of part of the ovum results from disturbance in the development of the decidua, the villi being anchored in situ by necrosed fibrin, such fibrinous adhesions being found on the decidua of placenta, which are expelled early, and also on those which have gone to term. Hyaline and fibrinous necrosis of the decidua are due to its deficient development amidst the hyperplastic and dilated glands of the mucosa. The decidua develops too few cells and the fibrous tissue preponderates, and thus forms wide tongues of a vascular tissue amidst the chorionic villi. This defective development of the decidua and its vessels, coupled with the biochemical effect of the penetrating syncytium, leads to decidual necrosis. All these injurious processes are demonstrated in hypoplastic uteri without the aid of bacterial changes. As regards the defective blood supply, a progressive diminution in the number of vessels results from thrombosis produced secondarily to the necrosis of the investing decidua.

<sup>1</sup> Archiv f. Gynäkol., Band lxxvi., Heft 1.

The walls of the vessels are too thin to withstand the increase of blood pressure, and they are further weakened by a deficiency in the decidual stroma, therefore transudation occurs, first followed by blood extravasation, and this is a further cause of decidual necrosis and also of death of the chorionic villi. Therefore stasis, thrombosis, and fresh hemorrhage continue in a vicious circle.

Analogous necrosis and hemorrhage with fibrinous deposition goes on in the decidua vera. The decidua is retained in some cases in spite of the puerperal hemorrhage or even after the establishment of the first menstrual flow. This has been known to be associated with a long period of amenorrhœa and also with epileptiform attacks. In a case of this kind the author explored the cavity of the uterus and found the mucosa covered with fibrinous coating rich in round cells and containing organized fibrous tissue. This membrane was analogous to endometritis exfoliativa. Such a membrane must be curetted, but inasmuch as this procedure sets up a profound hyperemia of the subjacent mucosa, leading to free hemorrhage for some days, daily intrauterine tampons of iodoform gauze should be employed afterward. Schaeffer concludes that except for free hemorrhage and for amenorrhœa, curettage in "hypoplasia uteri" is contraindicated, as a spongy mucous membrane, showing glandular hypertrophy, will perhaps establish a better substratum for the embedding of the ovum than formerly existed.

**Histology of the Breus Subchorial Hematoma.** Frankl<sup>1</sup> reports a case of a patient who had aborted twice previously. On this occasion the menses had not appeared for two months, when a slight flow was observed. Five months later an abnormally small egg was expelled from the uterus. The amniotic surface showed many humps and tuberosities projecting from it. These were of various sizes, and of a bluish color because of the collection of blood beneath the membrane. The largest of these was about the size of a pea. From the centre of the lumpy portion the umbilical cord arose and led to a very much flattened and compressed foetus. The value of the specimen is in that it shows the earliest stages of the mole formation, and because the protuberances are still very small, it easily permits demonstration that they develop in the intervillous spaces. The amnion was thrown into folds, its size indicating that it had continued to grow more than the chorion, after the death of the foetus. The chorion also showed a tendency to fold as described by Breus, and these, becoming dilated, appear as empty intervillous spaces. In these he was able to demonstrate newly formed bloodvessels filled with fluid blood, which formed the above mentioned protuberances. True hæmatomas result from the spreading of the blood foci and the degeneration or absorption of the villi.

<sup>1</sup> Beiträge zur Geb. und Gynäkol., ix., No. 3.



**Nervous Reticulum in the Villi of the Placenta.** Fossati<sup>1</sup> reports that he has found nerves in the placental villi by elaborate histological methods which he describes in detail. The stain used was chloride of gold and the manipulations were carried on in the dark.

**Chorioepithelioma following Hydatidiform Mole.** A favorable result following early operation in a case of chorioepithelioma is recorded by Burrage and Leary.<sup>2</sup> Whether there is a mild form as well as a malignant one they were not able to determine from their study in this case.

The patient, aged forty-three years, was admitted to the Hospital February 8, 1903. She had been married eight years; had two children and four miscarriages, cause unknown, the last at six weeks, two and a half years before entrance. Menstruation began at thirteen and had been normal. In December previous to her entrance to the Hospital her period had continued on in the form of a slight flow, until some time in January, 1903, when she had a severe hemorrhage. During the following weeks she had another hemorrhage and the amount of daily flow increased until her entrance. Symptoms on entrance were menorrhagia, pain in right side, headache, hot flushes, vomiting of three weeks' duration, poor digestion, and poor sleep. Physical examination revealed an elastic tumor in the pelvis, consistency of a hæmatocele, the cervix uteri being in front of the mass high up behind the arch of the pubis, the os pointing toward the posterior vaginal wall. The abdominal walls were rigid and it was impossible to definitely outline the tumor or uterus. Under ether the elastic tumor in the cul-de-sac was determined to be the fundus of a retroflexed and incarcerated uterus enlarged to the size of a four months' pregnancy. The incarceration was relieved and her condition was good for about three weeks, when severe labor pains and profuse hemorrhage set in, and in fifteen minutes she was delivered of a large mass of hydatidiform cysts and blood clots. The uterine cavity was curetted. The following day the temperature rose to 104° F. and she was given an intrauterine irrigation of sterile water. The further convalescence was normal and she was discharged in three weeks. The pathological diagnosis was hydatidiform mole and mucoid degeneration of the villi of the chorion. One week later there was a profuse hemorrhage. Pallor was now extreme, hæmaglobin 20 per cent., and the uterus large and soft. The hemorrhages were controlled by swabbing the uterus with tincture of iodine and packing it with gelatin soaked gauze, tamponing the vagina and administering ergot by the mouth. This procedure was repeated on alternate days for eight days, when the uterine cavity was curetted under ether. There was much hemorrhage, and much tissue was removed. It was not possible to make an absolute

<sup>1</sup> *Annali di Ostet. e Ginecol.*, April, 1905.

<sup>2</sup> *Surgery, Gynecology, and Obstetrics*, November, 1905.

diagnosis from the tissues removed, but from the known malignancy of new-growths of placental origin, radical treatment was considered indicated. Operation at this time was inadvisable. She was put upon tonics and advised to return should the uterine hemorrhages recur. Two months later she returned after having had some flow for three weeks. There was œdema of the feet and the urine contained albumin, blood, pus, granular and epithelial casts. The hæmoglobin had increased to 85 per cent., and her general condition was much improved. The uterus was the size of a two and one-half months' pregnancy. Eight days later, when the albumin and casts had disappeared from the urine, hysterectomy was done by the clamp method. There were no adhesions, enlarged glands, or extension of the disease to neighboring organs. Convalescence was uneventful and the patient left the hospital in one month. The pathological examination revealed a chorioepithelioma. The patient was last examined in August, 1905, and was then in good health generally and locally.

**Ulcer of the Stomach and Pregnancy.** Le Play<sup>1</sup> reports a rare case of ulcer of the stomach in association with pregnancy. The patient was a woman, aged twenty-seven years, six months pregnant, who had had severe vomiting for over three months. The stomach was dilated and tender and the vomiting constant and profuse. Rest and treatment improved her slightly, but two weeks after her admission to the hospital she had a considerable hæmatemesis, which was followed by syncope. Several other attacks followed, alternating with melæna. She rapidly became very weak and anæmic and aborted three weeks after admission, with very little hemorrhage accompanying it. The week following the abortion she had repeated attacks of hæmatemesis and gradually sank and died. Her appearance resembled that of progressive pernicious anæmia. The treatment by ergotin, ice, serum, and the usual therapeutic measures availed nothing. The autopsy revealed the viscera much discolored and evidences of tuberculosis in the apices of both lungs. The stomach was distended, atonic, and filled with old blood and undigested material. The larger curvature showed an ulcer extending almost to the pylorus. It measured 12 x 9 cm. and there was no perforation. The borders of the ulcer were raised, and the base reached the serous coverings. The surface of the ulcer was necrotic, and in parts replaced by mere connective tissue, which was the seat of embryonic cell infiltration. The cells of the gland tubules near the ulcer had undergone granular degeneration, and the bloodvessels nearly everywhere showed marked sclerotic changes. Stress is put upon this point as possibly explaining the pathology of the condition. Owing to the loss of nutrition

<sup>1</sup> *Annal. de Gynecol. et d'Obstet.*, May, 1905



following on this condition of vascular sclerosis, the adjacent areas of the mucosa would undergo degeneration and offer but feeble resistance, if any, to the actions of the acids of the gastric juice. Pregnancy he believes would similarly aggravate the local condition.

**Maternal Syphilis.** Whiteside<sup>1</sup> says that hereditary syphilis may be transmitted from the father or mother alone or from both together. Maternal syphilis he defines as only the disease of the pregnant woman. Maternal syphilis without paternal disease is rare, the reverse is common. The large majority of married women become afflicted from their husbands.

The diagnosis of syphilis in married women, especially those in the higher classes of society, is difficult. The woman is ignorant of the nature of her trouble, she is not afflicted with qualms of conscience on account of illicit intercourse, and suspicion of disease in her husband is slow to enter her mind.

Remember Hutchinson's advice "not to be overconfident in the diagnosis of syphilis." It is said that at times syphilis imitates almost every form of skin disease or mucous membrane affection or even may be confounded with tuberculosis and cancer. But a disease so common and far reaching should not be out of one's mind long when studying gynecological cases. Do not make the mistake of supposing every macerated foetus tainted with syphilis or that every puny, premature infant is the victim of this disease. Intrauterine syphilis is the exception, but, on the other hand, it is impossible for an infant whose mother is syphilitic to escape infection in utero unless her disease has been so recent that it has not had time to develop before parturition. The first evidence the attending physician will have may be the development of the taint in the infant a few days or weeks after birth. If a foetus inherits the disease from the mother, contracted after conception, the prognosis is that the mother will miscarry, although it is not uncommon that it may be carried to term. The child will appear well at birth but signs of inherited taint begin to show at the end of two or three weeks. If the child survive the first acute, febrile outbreak of secondary symptoms it will probably respond to treatment and grow up to be an apparently well individual. This is generally the case among the better class of patients; among the poorer class the mortality is very high.

Mercury is best administered to the infant by inunction, but it may be necessary to use the gray powder, in spite of the action of the bowels, which, if need be, may be controlled by opium. Whiteside advises keeping up medical treatment for two months after all symptoms have disappeared. Summing up, he says:

<sup>1</sup> Journal of the American Medical Association, October 7, 1905.

1. Look oftener for syphilis, as the presence of this disease will frequently explain obscure symptoms.

2. In the pregnant syphilitic woman give mercury fearlessly and promptly, as only in this way can the health of the foetus be protected.

3. Give the syphilitic infant every care and administer mercury. After thorough treatment the late forms of hereditary syphilis are rare.

**Pyelonephritis of Pregnancy.** Cumston<sup>1</sup> says that in reality it is only since 1892 that the exact pathogenesis of the renal lesions of this condition have been studied. He confines his remarks to those cases where obstetrical treatment has been resorted to more or less successfully. The ureter follows a course downward, inward, and forward, and penetrates the small pelvis in front of the sacroiliac symphysis at a point corresponding to the intersection of two lines: one passing in a horizontal direction through the anterior superior iliac spines, the other drawn vertically from the pubic spine. This point is situated 4.5 cm. from the median line, and the ureters are, therefore, separated from one another by 9 cm. At this point the ureter is in direct relation with the primary iliac artery and vein, which it crosses obliquely, while further on it passes over the external iliac artery and vein.

A space of about 1.5 cm. separates these canals from the sides of the uterus, and it consequently will be seen that when the uterus increases in size the relationship becomes closer. The ureters are 2.5 cm. from the bony pelvic walls. The transverse diameter of the pelvic cavity being 12 cm., the non-gravid uterus occupies the 4 middle centimetres, and in the spaces of 4 cm. to each side the ureters pass at the distance already pointed out. The two canals are, therefore, separated from one another by about 7 cm. During pregnancy these relations are changed. The body of the pregnant uterus rises out of the cavity, hypertrophies and becomes inclined to one side, usually the right. It also undergoes some torsion on its axis, bringing its left border somewhat forward, so that there is not alone an increase in size, but there is also a change in the direction of the organ. The relationship to the neighboring viscera is changed, the ureters are pulled upon, and from this their lumen has a tendency to become flattened. If the ureters of a woman dying in the latter part of pregnancy or immediately after labor are examined they will be found to be dilated to a degree varying in size from a goose-quill to the lumen of the small intestine. When one ureter is involved it is usually the right, when both are involved it is always the right one which acquires the greatest dilatation. The ureter may be dilated uniformly up to the renal pelvis or it may present a series of separate dilatations between which the calibre has remained normal. The changes in size never take place in the intrapelvic portion of the ureter, indicating that

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, October, 1905.



the pressure takes place at the superior strait. The walls of a dilated ureter lose their muscular contractility, the mucosa becomes hyperæmic, especially near the renal pelvis, which in a majority of cases is markedly increased in size. If pyelitis exists the walls of the renal pelvis become thickened and sclerotic, while the mucosa is covered by purulent debris, and occasionally it is found entirely hidden by a very adherent puriform layer. The kidney is ordinarily pale and anæmic, while the medullary substance undergoes marked changes. The tubules are dilated, and their lumen is obstructed by masses of casts, especially of the colloid variety. The distention of the renal pelvis may produce an atrophy of the renal parenchyma.

As the pregnant uterus develops, its borders become nearer to the ureters, which they displace and push over to the bones of the pelvis, upon which it compresses them. The uterus develops more to the right than to the left and inclines to the right, at the same time it undergoes a rotation on its vertical axis to the right, thus freeing the organs to the left and compressing those on the right. The pregnant uterus does not come out of the true pelvis until the third month, and this explains why renal symptoms are not observed before this time. There are two stages in the evolution of the lesions of pyelonephritis. First, there is a retention of urine in the kidney, which like the renal pelvis is distended, with the result of the formation of a urinary pocket. The second stage is represented by infection of this pocket. The infection reaches the kidney generally by two routes. By the first it extends from the bladder up the ureter to the kidney, an ascending infection, by the other route the bacteria are carried by the blood to the kidney and renal pelvis. In cases of pyelonephritis occurring during pregnancy, when no intercurrent suppuration occurs, it has been proven that the organism found in the pus is the colon bacillus. The organism was apparently taken up by the blood from the intestine. In two cases reported gastrointestinal disturbances practically coincided with the symptoms of the pyonephrosis. From this one may admit that the true pathology of this process is due to urinary retention modifying the kidney and excretory canal by lessening their resistance, and an increase in the virulence of the colon bacillus which is brought to the kidney from the intestine by the circulation. As secondary causes the influence of cold and overwork must be taken into consideration.

Generally speaking a hydronephrosis precedes a pyonephrosis, and consequently local symptoms mark the commencement of the process. Symptoms usually manifest themselves after the fifth or sixth month of pregnancy rather than before. The patient is seized with a severe pain in the right lumbar region, which may follow the course of the ureter, radiating toward the bladder or even down the thigh. At the

same time micturition becomes more frequent and may even be painful. In a few cases the general symptoms are first observed, and from the very commencement of the process the patient presents evidence of a septic process. No matter how it may commence a pyonephrosis, when fully developed, presents three principal symptoms, namely, pain, changes in the urine, and the symptoms of a septic process.

The pain is spontaneous, localized in the lumbar region and increased by palpation. It also presents exacerbations, probably due to the retention of urine and pus in the renal pelvis. It may be intermittent, due to the uterus changing its position and thus ceasing its compression on the ureter. It has been shown by experimental urinary retention that the pain is due to contraction, which disappears within twenty-four or forty-eight hours on account of paralysis of the muscular layer of the ureters, and from this fact one may explain the disappearance of pain, although the process continues its evolution. Bimanual palpation of the renal region will give rise to pain, and occasionally when the patient is lying down with the leg slightly flexed, renal ballottement may be elicited, but in women six or seven months pregnant the size of the uterus will usually prevent the obtaining of any data. Under these circumstances one may try to insert the hand as far as possible under the costal border, pushing the uterus forward; this is very difficult to accomplish and only gives positive results in cases where dilatation of the ureter and renal pelvis is very marked.

The urine varies, sometimes there is polyuria and pollakiuria, while there may be a very marked decrease in the twenty-four-hour amount, due to the diseased kidney no longer functioning. Anuria may arise, and the urine may contain very large quantities of pus, which is easily recognized by ammonia. A microscopic examination will show large numbers of white cells, occasionally a fairly large proportion of red cells, some casts, colon bacilli or other bacteria. The production of the pus is usually very considerable and persistent, although it may be intermittent, due to the fact that by a change in position of the uterus the obstruction of the ureter is done away with or the latter may be rendered absolute and the pyuria is consequently more or less intense, or may even disappear completely. From the standpoint of prognosis this intermittence of the urine is of extreme importance, because when the diseased ureter becomes completely obstructed the urine voided during this time will be clear and limpid, which indicates that the opposite kidney is normal.

As to the diagnosis the most important point is to differentiate a pyelonephritis from a cystitis. Cystitis presents three characteristic signs: bladder pain, frequency in micturition, and pyuria; pyuria is the only one of these symptoms common to both cystitis and pyelonephritis.



There may be pain in the region of the bladder in pyelonephritis, but it is a radiated pain and the bladder is insensible when palpated. Catheterization gives rise to no severe pain, and if 200 c.c. or 300 c.c. of liquid be injected into the cavity no pain results, and there is no imperative desire to micturate. Micturition may at times be more frequent in pyelonephritis, but this is not painful as it is in inflammation of the bladder.

Pyuria, which is common to both affections, leaves a purulent deposit, the remainder of the urine being generally clear in cystitis, while in renal lesions the urine is milky and remains so. Pyuria is marked and continuous, persisting during the entire micturition in pyelonephritis, while in cystitis it is especially marked at the commencement and end of micturition, a fact noted by the three-glass test. When a pregnant woman presents pus in the urine, with no increase in the frequency of micturition, and little or no pain in the region of the bladder, one should immediately examine the renal region to ascertain whether a pyelonephritis may not be present. If the process manifests itself by general symptoms indicating some deep-seated suppuration, accompanied by the presence of pain in the lumbar region, a perinephritic abscess may be thought of. In these cases a diffused tumefaction will be found in the lumbar region, although no distinct tumor can be made out by palpation, nor can renal ballottement be made evident. The pain is diffuse, while in pyelonephritis there is a distinct painful point corresponding to the renal pelvis. The patient should be questioned as to her previous urinary history to ascertain whether a traumatism, tuberculosis, or renal lithiasis may be the cause, as these factors must be eliminated before a positive diagnosis of pyelonephritis of pregnancy can be made. The prognosis as far as the mother is concerned cannot be given by any general rule, usually, although the patient may be quite weak, natural labor may be awaited, after which the symptoms disappear all the more rapidly when the pyelonephritis has commenced late in pregnancy. To ascertain whether this pyelonephritis may be the starting point of a chronic nephritis, the patients must be followed for a considerable time after their recovery, this to the author's knowledge has not been done. As to the evolution of the pregnancy, the prognosis must be extremely reserved. The general symptoms render the interruption of pregnancy necessary in some cases, but it may be said that pregnancy will come all the nearer to term the later the pyelonephritis has commenced.

The prognosis for the child is still more guarded, and when a pregnancy goes to term the foetus does not appear to undergo any very serious influence from the maternal renal lesion, but, on the other hand, the child may be born weak and sickly and die shortly after delivery.

As to treatment, two classes of cases may be met with. In the first

the renal pelvis empties itself by the ureter, in which case medical means, such as milk diet and local revulsion, may be employed, and a cure usually follows a spontaneous labor. In the second case more active intervention must be resorted to, the choice being between nephrotomy or the induction of premature labor. Nephrotomy may result in a permanent fistula. To Cumston, this method under ordinary circumstances does not appear to be the one of choice because in a large number of cases the renal processes will cause a premature labor. He advises following the natural course of the pregnancy, and in serious cases, where surgical interference is necessary, to empty the uterus rather than resort to nephrotomy, which should be reserved for those instances in which obstetrical treatment remains without success; these serious cases are fortunately few in number.

The degree of fever, the more or less amount of difficulty in the urinary secretion, and the patient's general condition are the guides which will indicate whether or not operative treatment will be required.

**Purpura Hemorrhagica during Pregnancy.** Purpura hemorrhagica is considered a most serious condition of the blood during pregnancy. The condition is sporadic in pregnant patients and occurs without regard to family history or previous condition. The mortality is very high in these cases.

Van Sweringen<sup>1</sup> reports a case successfully treated during pregnancy and delivered at term of a fully developed child. The mother, aged twenty-five years, had been previously well, had no hemorrhagic heredity, and was in her first pregnancy. She had much nausea and vomiting in the early months and the cervix was cauterized to relieve this condition. Some relief was afforded, but a vaginal discharge, which had previously existed, became more profuse and purulent in character. She conceived in August. The following January a number of small hemorrhages occurred from the nose, and a fine eruption appeared on the body and extremities, particularly the extensor surfaces. The eruption was petechial in character and did not fade on pressure, later several large areas, resembling severe contusions, appeared. The hemorrhages from the nose increased in frequency and amount and bleeding also began from the gums. At this time she suffered from dyspnoea, which was increased on exertion, some nausea and a purulent vaginal discharge tinged with blood. The urine contained both albumin and sugar on the first examination, but no casts. Blood cells and epithelium were also present.

The blood examination showed 50 per cent. hæmoglobin; 2,808,000 red cells, and 5126 white cells. Cultures were made from the blood, but nothing was learned from them. The temperature was 99° F. and the pulse 92. The temperature never rose above 99.4° F., nor the pulse

<sup>1</sup> American Medicine, vol. x., No. 22.



above 100. One week after the first blood count was taken the hæmoglobin had increased to 56 per cent., the red cells to 2,648,000, the white cells to 6230. The urine contained a small amount of albumin, no sugar, a few epithelial cells, and some leukocytes. The treatment consisted of 0.3 (5 grains) of calcium chloride and 0.06 (1 grain) of extract of suprarenal gland every three hours, a ferruginous tonic and gelatin *ad lib.* The patient made a gradual improvement, and progressed satisfactorily during the balance of her pregnancy. No alarming hemorrhage occurred at any time. The puerperium was normal. The fact that the vaginal discharge, after cauterization, becomes more profuse and purulent leads the writer to think of it in support of the theory that the cause of the disease is a blood infection, though the absence of a leukocytosis seems against it.

**Pulmonary Tuberculosis as an Obstetrical Complication.** Bacon<sup>1</sup> believes that from 1 to 1.5 per cent. of all pregnant women have tuberculosis to a degree that is demonstrable upon careful examination. This ratio corresponds to the frequency ratio of tuberculosis in adults. Concerning the effect of pregnancy upon the disease there has been much difference of opinion. Formerly the idea was prevalent that pregnancy improved the tuberculous condition and in some cases caused a cure. This was no doubt due to an improvement in general nutrition, to better general hygiene, more rest, etc. It is not impossible that chemical changes in the blood might produce conditions inimical to bacterial growths.

Pregnancy frequently, however, has a bad effect upon the tuberculous process, a rapid development of tuberculosis in the lungs or an acute miliary fever may appear. This is more apt to appear when the disease has progressed or when nutrition is low. Nausea and vomiting or other gravidal toxæmias may increase the danger. In the latter months of pregnancy pressure against the diaphragm by the growing uterus may interfere with an already impaired respiratory function. Labor is an unfavorable factor in the course of the disease. In the severe forms it not rarely leads to an immediate fatal termination. The detrimental influence of the latter part of pregnancy and of labor is revealed during the puerperium, which is characterized by a rapid progress of the disease. The puerperium itself, with its usually enforced confinement in poorly ventilated and overheated rooms, is injurious and is always a critical one even for milder cases and a dangerous one for advanced cases. The effect of tuberculosis on pregnancy is slight except when there is considerable fever and coughing, when abortion is common. Placental or decidual hemorrhage is much less common than in case of cardiopathies or nephropathies. There is less tendency to abortion than in complications of pregnancy with heart and kidney disease.

<sup>1</sup> Journal of the American Medical Association, vol. xiv., No. 15.

The foetus rarely becomes infected, such-infection when it occurs probably is a result of solution of continuity of the placental partitions between maternal and foetal circulations. Foetal tuberculous infection is less common than foetal smallpox, foetal scarlet fever, and foetal cholera. In mild forms of the disease labor may be quite normal, but in emaciated patients the contractions may be feeble and inefficient. The failure in the forces of labor combined with the weakness of the patient is an indication for an early interference. The puerperium generally shows the effects of consumption most markedly. When the exhaustion of labor is great the patient may die in the succeeding two or three days, in milder cases they usually become much worse. If a tuberculous process exists there can be no excuse for a marriage, as it will only result in dangerous complications.

As a rule pregnancy should not be allowed to occur in a tuberculous wife, but if, in a case where there is not an extensive involvement, the woman is extremely desirous for children, and can be put in the best hygienic surroundings during pregnancy and the puerperium, and she be fully informed of the risk, the physician is justified in undertaking her care. Where she must do her own housework and stay much indoors the conditions are not ideal and conception should be forbidden. For these patients artificial sterilization may be a legitimate operation. The probability of a recovery should be carefully weighed before making a decision. Vaginal or abdominal resection of the tubes is considered best. In the case of a tuberculous pregnant woman we must decide whether or not the pregnancy should be interrupted. If she can obtain the best of care during pregnancy, the puerperium, and for the child, she should be encouraged to continue the pregnancy, especially if the process be not far advanced. A complication, as heart disease, hyperemesis, nephritis, or other acute or chronic diseases, is an additional indication for abortion. The operation should be performed before the twentieth week, later an attempt should be made to carry the child on to the period of viability. Rapid emptying of the uterus is the best method, and ether anæsthesia is not contraindicated.

If pregnancy be allowed to continue the patient should: 1. Live in the open air as much as possible. 2. She should be fed with good, nutritious food. 3. She should avoid exhaustion or fatigue. Symptomatic remedies are to be administered as necessary. When the period of viability is reached, rapid or gradual failure of nutrition will be an important indication for the operation. Hæmoptysis would be an urgent indication. Exhausting, uncontrollable cough or laryngeal or pleural complications or other severe respiratory disturbances, like dyspnoea, may call for artificial delivery at the earliest moment. Labor should be induced at the thirty-sixth week. The method employed should



be that which furnishes quick relief from urgent symptoms, and which also assists and hastens labor. For this reason the bougie method should not be used. The cervix should be dilated manually or with instruments, the membranes ruptured, and after the liquor amnii has escaped, relieving pressure symptoms, a metreurynteur should be introduced. In the most urgent cases a vaginal Cæsarean section may be done.

The proper management of labor in a consumptive involves careful watching of the patient and efficient timely interference upon the first evidences of exhaustion. Oxygen, strychnine, and salt solution, injected subcutaneously, may be needed. Postpartum hemorrhage, while not particularly common in such cases, should be prepared for. For the first forty-eight hours the most imminent danger is from circulatory disturbances. Oxygen, strychnine, and physiological salt solution, with most careful watching, are the weapons to combat this danger. Later, we must look after nutrition and fresh air. The patient should be carried to an out-door bed or couch and lie there most of the day unless the weather be very inclement. This should be begun as soon as the immediate danger is past. Under no circumstances should she nurse the child, and it should not be kept in the same room. A wet-nurse is best and there is no danger to her from the child, for it is almost never tuberculous.

**Withdrawal of the Liquor Amnii. Cause of Fœtal Death and Placental Changes.** Watson<sup>1</sup> reports his results obtained in experiments upon rabbits to ascertain something regarding the origin of the liquor amnii. Although not much light was thrown upon this problem interesting results were obtained with regard to fœtal death and the changes which the dead fœtus and its placenta undergo while retained in utero.

The animals were anæsthetized, the uterus exposed, and an ordinary glass syringe, with a fine, sharp needle, was used to withdraw the fluid.

The needle was made to enter near the roof of the sac and thus well away from the placenta, and great care was taken not to injure the fœtus. The amount of fluid withdrawn varied with the period of gestation. A slight leakage occurred in some cases after the withdrawal of the needle. In the earlier experiments this was all that was done; in the later ones, owing to the necessity of obtaining a standard by which to judge of the placental changes induced, one of the normal sacs was in every case completely excised. Only one rabbit aborted and it was near term. Only one had sepsis. The animals were chloroformed from three to fourteen days after the operation, the uterus excised and hardened in formalin for from twenty-four to forty-eight hours. The uteri were then cut across and studied macroscopically and afterward embedded in paraffin and cut in serial sections. Eight complete experiments in all were made,

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire January, 1906.

the period of pregnancy varying from the tenth to the twenty-first day. The stage of gestation at which the operation was performed did not at all affect the nature of the changes induced in the foetus and placenta.

The results of the experiments were that when the animals were killed the sacs which had been aspirated were always found to be smaller than the normal sacs. This was due to the fact that there had been no re-secretion of the liquor amnii and that the foetus had died. The sequence of events after the withdrawal of the fluid was: (1) death of the foetus and subsequent degeneration; (2) placental changes; (3) arrested secretion of the liquor amnii. The conclusions reached were as follows:

1. That the foetal death was due to the result of the withdrawal of the yolk-sac fluid and the liquor amnii. The foetus dies at once, due to the arrest of the vitelline and allantoic circulations.

2. The dead foetus undergoes characteristic changes, it and the placenta are retained in utero, and the former undergoes degenerative processes and becomes flattened out.

3. The changes which occur in the two parts of the retained placenta, maternal and foetal, are different in nature. After being retained in utero five days after the death of the foetus the foetal placenta shows signs of degeneration. The mesoderm is extensively invaded by fibrin threads, which in places form laminæ. The ectoderm in the centre is markedly degenerated, nuclear staining is lost, and the protoplasmic staining irregular. Although the degeneration is less marked at the maternal surface the power of penetrating the maternal tissues is lost. As the interval between the death of the foetus and the mother lengthens from five to seven, ten and fourteen days a progressive series of changes can be traced in the maternal placenta. The fibrinous deposit in the maternal placenta becomes more extensive, and the fibrin laminæ become denser, so that the decidual cells degenerate and disappear. The fibrin laminæ around the vessels become thickened so that many of the latter are blocked, while the tissue forming the zone of separation becomes more attenuated as contrasted with the normal. The fibrinous deposit in the foetal mesoderm becomes more marked, and after an interval of nine days begins to invade the ectoderm, breaking it up and compressing it. The ectoderm undergoes a progressive degeneration, and ultimately almost completely disappears among the mass of fibrin, which after an interval of fourteen days comes to make up a great part of the foetal placenta.

4. There is no tendency to proliferation of the ectoderm after foetal death.

5. The changes which the maternal placenta undergoes do not differ in their essential nature from those that occur during the normal development.



6. The placenta becomes detached only when the tissue forming the zone of separation has become sufficiently attenuated, and it does so in the same manner as the normal placenta.

7. The secretion of the liquor amnii ceases on the death of the foetus.

**INFECTION OF THE LIQUOR AMNII.** According to Hellendall<sup>1</sup> theoretically there are three ways in which the liquor amnii may become infected: 1. Infection through the vagina, the membranes being intact or ruptured. 2. Infection from the peritoneal cavity through the tubes and through the membranes. 3. Infection from the uterine wall.

While it is generally admitted that the liquor amnii may become infected after the rupture of the membranes, the possibility of its becoming infected before their rupture has not been proved. Clinically, this condition is manifested by the discharge of a foul-smelling fluid when the membranes rupture, or by finding bacteria in fluid aspirated from the interior of the intact membrane. To throw some light upon this point Hellendall made experiments upon pregnant rabbits. *Bacillus coli* were introduced into the vagina, which was then either sewed or tamponed shut. After twelve to twenty-four hours a laparotomy and complete hysterectomy were performed, and the liquor amnii examined bacteriologically. The results were as follows:

1. Either the whole ovum contained bacteria or they were found only at the vaginal pole.

2. The muscle of the uterus was not invaded by bacteria, and they were found only in the inner layers of the decidual lining of the uterine mucous membrane, from the vagina upward to the tube.

From this we may conclude that virulent motile bacteria introduced into the vagina may spread upward between the oval membranes and the uterine wall, and may also enter and infect the liquor amnii. Whether it is possible for such an infection to pass downward from the peritoneal cavity has not yet been proved. This has a bearing upon appendicitis and peritonitis in pregnancy, for it has frequently been observed that the children are born dead, or die soon after birth with septic symptoms, the mortality of the children being 85 per cent.

It is not clear whether the infection comes from the abdominal cavity, the uterus, or through the blood. Another series of experiments was made by the writer to determine this. In this series intraperitoneal infection of pregnant rabbits was made, with the following results:

1. The egg contents showed bacteria, and these were especially abundant near the peritoneal openings, less abundant toward the vagina.

2. The connective tissue between the foetal membranes contained many bacteria.

3. The uterine section showed no bacteria, except in the serous and

<sup>1</sup> Zentralbl. f. Gynäkol., 1905, No. 41.

mucous membranes. Therefore, he believes that infection may thus pass down the tubes to the egg, and, penetrating the membranes, contaminate the liquor amnii. That hæmatogenic infection of the egg may occur he has also demonstrated by intravenous infection of pregnant animals, with the following results:

1. In all cases a large number of germs were found in the ovum.
2. These were demonstrable within three hours after their introduction into the blood.
3. The bloodvessels of the placenta, and especially the egg membranes, were filled with bacteria.

**Pneumonia Acquired in Utero.** Bochenski and Grobel<sup>1</sup> report a case in which the infant seems to have acquired pneumonia in utero. The mother, aged thirty-nine years, had borne five children. She was admitted to the hospital in the last month of her pregnancy with a definite pneumonia of the lower lobe of the right lung. She was delivered of her child three days later. The child was cyanotic and dyspnoëic when born, and showed signs of pneumonia on auscultation, *i. e.*, fine crepitations, bronchial breathing, and dulness on percussion. The child died eleven hours after birth. The postmortem examination showed that it had lobar pneumonia of both lungs except at the apices, acute bronchial catarrh, and hyperæmia and parenchymatous degeneration of the liver and kidneys.

Micro-organisms were found in the lungs which, in appearance, culture, and inoculation into animals were identical with the diplococcus of Frankel-Weichselbaum. The microscopic examination of the lungs completely verified the naked-eye diagnosis of lobar pneumonia. The short period which elapsed from the birth of the child to its death, eleven hours, appears to exclude the possibility of postnatal infection, as the microscopic evidence went to show that the pneumonia had existed at least two days. There was no evidence in this case to show how the bacteria found their way from the mother to the foetus, as the placenta seemed quite normal to the naked eye, and was not examined microscopically. If during the uterine contractions in labor the villi had been injured sufficiently to allow bacteria to pass, the period is too short for the lesions to have developed unless the infection took place before labor began, since the labor only lasted six hours and the child lived eleven hours extrauterine.

**Auscultation of Fœtal Heart Sounds at the Thirteenth Week.** Sarwey<sup>2</sup> again maintains his previous assertion in regard to the possibility of being able to auscult the foetal heart sounds from the thirteenth week

<sup>1</sup> Monats. f. Geburts. und Gynäkol., Band xxii., Heft 4; Journal of Obstetrics and Gynecology of the British Empire, December, 1905.

<sup>2</sup> Deutsch. med. Wochenschrift, August 17, 1905, xxxi., No. 33.



of pregnancy. He states that they become perceptible almost always at the same spot in the horizontal plane of the internal os.

The physician must have a trained ear, a perfectly quiet room, and great patience. The bladder should be catheterized previous to the examination. The anterior wall of the uterus must be brought into apposition with the anterior abdominal wall, which must be pushed in deep with the stethoscope just above and back of the symphysis.

**Pregnancy Pains.** Schatz,<sup>1</sup> of Rostock, as early as 1870 studied the mechanical effects of uterine pains, and measured them by means of a colpeurynter placed in the uterus and connected with a dynamometer. Thus he was able to measure and record the force of the uterine contractions during labor. His investigations latterly have led him to the consideration of the central control of the nervous mechanism of the uterine contractions. He holds that there is a centre in the medulla for exciting uterine contractions and also one for inhibiting them. The inhibitory centre has periodic intervals of depression, corresponding in a way with the menstrual periodicity, and at these periods of depression during pregnancy, uterine contractions and sometimes subjective pains will be set up in a regular rhythm. The normal termination of pregnancy is at one of these periods of depression of the pain inhibitory centre and usually corresponds to the end of the tenth lunar month. Similar periods occur, though less markedly, throughout pregnancy, and are especially noticeable toward the end of gestation.

The writer discusses the so-called "bad pains" which are often mistaken for true labor pains, but which are usually typical periodical contractions of the latter part of pregnancy. The existence of these pregnancy pains is very little recognized by the profession. The history of these pains is so little understood by the average obstetrician that Schatz considers it lucky for the average woman affected by these pains if she does not fall under the observation of some midwife or physician. The chances are that the character of the pains will be mistaken, and believing them to be the true pains of labor and indicative of inertia of the uterus, meddlesome and perhaps dangerous measures will be instituted. Several such cases are cited where the pregnancy pains began several days before the estimated date of labor, but usually in a period half or a quarter as long as the menstrual type. The pregnancy pains often encroach so closely upon the labor pains that it would be difficult to draw the line where the former ceased and the true pains of parturition began. The main point was that in most cases the pregnancy pains were of much less intensity than the true labor pains. They would have been diagnosed by many as "bad pains," "weak pains," or pains of inertia. In some

<sup>1</sup> Die Deutsche Klinik, ix. p. 281.

cases there was more than one series of pregnancy pains, often with intervals of several days between them. Schatz estimates that 10 per cent. of women who have been long enough in the clinic to have the pregnancy observed exhibit marked pregnancy contractions. He holds that hemorrhages during pregnancy and eclampsia during pregnancy in most instances coincide in point of time with the periodical pregnancy pains.

Schatz recognizes two general types of periodicity in pregnancy pains, the four-weekly and the six-weekly. In many women there occurs at least once, after the beginning of pregnancy, a sort of pregnancy menstruation, at least symptoms, including sometimes a slight show of blood, analogous to those of regular menstruation, although less marked. Such a pregnancy menstruation comes on usually four weeks after the last normal menstruation. In many women, however, this menstruation appears—and often with regularity in successive pregnancies—six weeks subsequent to the last catamenial flow rather than four weeks thereafter. In such women also the first menstruation after labor often occurs in six weeks instead of four weeks. He, therefore, distinguishes the four-weekly type, with its fractions of two- and one-weekly periods, and the six-weekly type, with its fractions of three and one and one-half weekly periods. In primiparæ these pregnancy pains are often slightly felt and probably not often felt at all, although they serve to dilate the os to a considerable degree, and even to thin out the cervix. One hundred and sixty cases are quoted by the author from his clinic at Rostock in illustration of both the whole and fractional periods. There seems to be a tendency in subsequent pregnancies for the women to follow the type exhibited in their first. Enough observations have, however, not been made to determine this point certainly.

During the last month of pregnancy the pains are always more frequent and more easily aroused. The nervous apparatus of the uterus is more susceptible to irritation at that time. If one notes the time from the beginning of one series of pains to the beginning of another period, as one would in speaking of menstruation, then one finds that the pain periods toward the end of pregnancy repeat themselves, always, however, by halving or quartering. Here, as in reckoning menstruation periods, the duration of the series of pains is not counted, only the beginning.

The writer thinks that probably all pregnant women experience these pregnancy pains throughout pregnancy to a greater or lesser degree. The almost universal partial dilatation of the os and thinning of the upper part of the cervix, as well as the rapid entrance of the head into the pelvic inlet in primiparæ, prove their existence in the later months.

The periodical hemorrhages in placenta prævia without subjective pains show the existence of periodical pains during the early months.



Probably all pregnant women have pregnancy pains regularly and periodically, although they seldom feel them acutely in a subjective sense. The frequency and severity of the painful periods toward the last of pregnancy seem especially liable in the neurasthenic.

Besides the regular periodical pains of pregnancy there exist sometimes, although relatively rarely, series of pregnancy pains of irregular appearance due to some local irritation, such as sudden changes in the position and posture of the woman, extra strong movements of the child, influence of heat and cold upon the abdomen, etc. Psychic, neurotic, and bodily causes of irritation outside of the uterus may sometimes be the cause of such pains. Such irregular and non-periodical contractions must be considered as of a more or less pathological nature. Fever may cause pregnancy pains, but usually only when it occurs at a time coincident with a period when the pain-inhibitory centre is depressed, namely, one of the typical periods or fractional parts thereof, already mentioned. The pregnancy pains do not necessarily begin at exactly the typical period; they may be advanced or postponed for a day as the menstrual periods are, at times.

The diagnosis of pregnancy pains and their differentiation from labor pains in individual cases is not easy. The duration of single pains is commonly less in the pregnancy pains than in labor. The duration depends upon the contractile energy of the uterine musculature, and this is less in pregnancy than at term. The efficiency of the contractions offers the best mark of differentiation between the two classes of pains. Those of pregnancy, owing to the less complete preparation of the tissues, are much less effectual than are those of labor, although in other respects they appear similar. Dilatation of the cervix and soft parts does not take place so readily. The secretion of mucus is less. Mixture of blood with the mucus is seldom noted in the pregnancy pains. Rupture of the membranes is less likely to ensue after a considerable duration of pregnancy pains than after a similar duration of those of labor. On the other hand, both dilatation of the os and loosening of the waters may occur quite early in the progress of pregnancy pains and true labor not ensue for several days or weeks. The most characteristic feature of pregnancy pains is the apparently uncaused cessation thereof. In twelve or twenty-four hours the pains diminish and cease as if the uterus had become exhausted. In well-developed women it is known that such exhaustion or inertia of the uterus very rarely comes on within so short a time and without much stronger pains and pains which have met with great obstruction. The time of onset is the most important diagnostic mark of pregnancy pains. When pains begin earlier than the estimated term the probability is that one has to deal with pregnancy pains instead of a premature labor or an inaccurately estimated labor.

The farther ahead of the estimated time of labor the more probable the diagnosis. Another manner of differentiating these pains is by the administration of a dose or two of quinine. This will not affect the pains of pregnancy nor will it start pains *de novo*, but will increase the strength and frequency of true labor pains. Change of posture from the dorsal to the semiprone position will cause a distinct diminution in the frequency of pains of pregnancy and those of the dilatation stage of normal labor. When a probable diagnosis of pregnancy pains is made, the writer recommends the use of morphine or codeine, to diminish the strength and frequency of the contractions and as a means of the possible onset of true labor. Chloroform or chloral should only be used when eclampsia threatens. If a premature emptying of the uterus is necessary, it is well to select as the time for artificial interference one of the periods of the pregnancy pains. This can be estimated by calculating the expected term of pregnancy and carefully observing for the pregnancy contractions of some period before that event is due, such as four, two, or one week before the estimated term. When the pains begin so near the calculated end of pregnancy that one is in doubt it is well to give a dose of quinine, repeated in two hours. If the pains are those of true labor the quinine will accelerate them, while if they are pregnancy pains no effect will be observed. If they are pregnancy pains the patient should be given morphine and put to bed in the semiprone position. The obstetrician should remain calm and await developments. He should not allow himself to be urged into taking any operative measures or other means of hastening labor because he may think he is confronted with "poor pains" or inertia of the uterus. Patience should be the watchword. Strenuous measures are decidedly out of place and they are not seldom followed by hemorrhages or detachments of the placenta.

### OBSTETRIC SURGERY.

**Artificial Dilatation of the Cervix in Obstetrics.** Knapp<sup>1</sup> says in the discussion of this most interesting subject before the German Gynecological Society—the artificial dilatation of the cervix uteri for the purpose of exposing the uterine cavity—it was hardly to be supposed that a generally accepted decision in regard to the *method of Bossi* was to be expected. Many different opinions have been expressed in the already extensive literature of this subject. The indications for opening the uterine cavity are: 1. Exploration for diagnosis as it is employed in the gynecological field. 2. Therapeutic reasons, such as are found in the practice of obstetrics. The indications for opening the uterine cavity

<sup>1</sup> Surgery, Gynecology and Obstetrics, vol. i., No. 5.



in pregnancy, labor, or the puerperium are the need of inducing or terminating abortion, premature labor or labor at term, and most of all in the removal of retained membranes during the puerperium.

Should it become necessary at the thirty-sixth week to induce labor artificially or terminate it by *accouchement forcé* we must have one of the following indications: Marked heart or lung disease, or other severe disease of the mother, particularly eclampsia; complications of labor, such as hemorrhage, relative disproportion between the pelvic and the foetal head, anomalies of the pains, a pre-existing puerperal infection, a cicatricial stenosis of the cervix, or conditions threatening the life of the child. If, in using the dilator, the opening has advanced to two fingers' breadth the instrument may be removed and the dilatation continued by the means of rubber bags. If haste is urgent the instrument is again introduced, after having capped the arms with metal covers, to bring broader surfaces into play for further dilatation. Complete dilatation may be accomplished in an emergency in half an hour. While dilating it is necessary to pause from time to time, the instrument being held in place by a bandage. His experience with the instrument has led him to make several modifications of Bossi's pattern calculated to decrease the dangers of the instrument. In general, the method is to be recommended in cases of emergency, as follows:

1. To dilate the cervical canal as a preliminary to digital or instrumental curettage of the uterus in abortion.

2. To secure sufficient enlargement for the introduction of a metreurynter, where it is better not to complete the dilatation with the instrument itself.

3. To enlarge the cervix for the purpose of performing combined podalic version, especially when extraction is to follow immediately.

4. As a procedure preliminary to operations for delivery (forceps, manual extraction, craniotomy, embryotomy, etc.), where the narrow condition of the external os does not permit, or renders very difficult, the desired manœuvre.

5. To open the completely closed or more or less dilated os in *accouchement forcé*, as in the artificial induction of premature labor or at term, *i. e.*, eclampsia, and, under certain circumstances, *in agone*, or even postmortem.

6. To dilate the os where it is abnormally rigid and to induce contraction in such cases. Other indications are: the necessity of quickly terminating labor in premature separation of the placenta, the interruption of a missed labor, and the retention of membranes with consequent puerperal fever, the cervical canal being in a state of marked contraction.

Where there is extensive cicatricial or carcinomatous stenosis forcible use of the dilator is not advised.

The dangers contraindicating forcible dilatation are: 1. The possibility of causing severe laceration of the cervix and of injuring the lower uterine segment. 2. The incomplete effect of the method, in that it may fully stretch the cervical canal without securing effacement. There may also be difficulty in passing the dilator when the head is low down and fixed. Bossi's method incurs the danger, in common with all forcible methods of delivery, of causing more or less injury at the cervix. One must ever be on guard against the occurrence of lacerations, and should have the necessary training and preparation to meet this accident. In the writer's opinion the forcible dilatation of the cervix, like all other forms of *accouchement forcé*, must be reserved for the most pressing necessity, when the dangers, carefully weighed against the circumstances giving rise to such intervention, must be taken into consideration.

Hemmerschlag<sup>1</sup> reports his experience in the Königsberg clinic with the different methods of dilating the cervix uteri. In 8000 labors the cervix was artificially dilated 243 times, a frequency of 3 per cent.

1. *Dilatation by using the body of the fœtus as a dilator during delivery.* This was done in 135 cases, of which 123 cases were of version and 12 the bringing down of the feet in breech presentations. The indications for the operations were placenta prævia 110, infection 11, eclampsia 7, premature separation of the normally attached placenta 2, maternal diseases 2, pneumonia 1, transverse position of the fœtus 1, and asphyxia 1. The operation was undertaken when the cervix would admit two fingers and if necessary to secure this dilatation Hegar's dilators or a tampon of iodoform gauze was employed. The time occupied in concluding labor by this method varies from fifteen minutes to ten hours, with an average of two hours and fifteen minutes. In general when the feet can be brought through the cervix, labor can be ended within two hours. In 135 operations there were 11 maternal deaths, 5 from septic infection, 3 from anæmia, 1 from eclampsia, 1 from pneumonia, and 1 from cardiac disease. The morbidity was 38 per cent., and in 29 per cent. of the mothers there were considerable lacerations of the cervix. In 22 of the mothers parametritis was present after labor, in 20 vaginal prolapse and in 7 endometritis. Among the children the mortality reached the high figure of 90 per cent. with but 10 per cent. surviving children.

2. *Dilatation with elastic bags.* This was done forty-seven times. The indications were for placenta prævia in 9 cases, eclampsia in 8, induced labor in 8, fever in 7, contracted pelvis in 5, asphyxia in 2, transverse position in 2, tuberculosis in 2, and premature separation of the normally attached placenta in 1. The average time necessary for dilatation

<sup>1</sup> Zeitschrift f. Geb. und Gynäkol., 1905, Band lvi., Heft 2.



was seven and a half hours. In 2 cases the bags failed utterly to secure a result. In 4 cases prolapse of the foetal arm occurred and in 5 cases prolapse of the cord. Among the 47 patients there were 4 maternal deaths, 2 from sepsis, 1 from anæmia, and 1 from eclampsia. The morbidity was 39 per cent., and 24 per cent. of cases had cervical lacerations extending to the vaginal junction. Of the children, 64 per cent. lived and 36 per cent. were born dead.

3. *Dilatation with Bossi's dilator.* This method was employed in 25 cases. Every precaution was taken to avoid laceration and a strict account was kept with a watch of the time consumed. Two minutes were consumed in securing a dilatation of 0.5 cm. If the resistance of the cervix was great, less dilatation was produced in the same time. When dilatation reached 9.5 to 10 cm. if the patient was at full term labor was terminated. The time consumed in dilatation varied from fifteen to forty-five minutes. After removing the instrument a very careful exploration was made to determine the presence or absence of lacerations. After the use of Bossi's dilator it was considered best, if possible, to deliver by forceps. If version was performed special care was exercised in bringing the head through the cervix to avoid laceration. The indications for the operation were eclampsia in 9 cases, infection in 9, premature separation of the normally situated placenta in 2, tuberculosis in 2, prolapse of the cord in 3. The operations performed after dilatation were the use of the forceps in 13 cases, perforation and cranioclasia in 4, version and extraction in 5, extraction alone in 1 case, and expression of the foetus in 2 cases. Of the twenty-five mothers, 4 died; 2 from eclampsia, 1 from septic infection, and 1 from tuberculosis. In autopsies upon patients dying after dilatation the cervix was examined to determine the presence of laceration. In 2 of the 4 cases laceration was absent. In 1 there was laceration with bruising of the muscular tissue extending to the serous coat, and in 1 case injury extended to the parametrium. The febrile morbidity was nothing; 33.3 per cent. of the cases had laceration of the cervix; 4 cases had chronic parametritis, and 3 had prolapse of the vagina. Of the children, 56 per cent. were born living and 44 per cent. were stillborn.

4. *Dilatation by Duhrssen's method of deep incision into the cervix* was employed in 30 cases. It was limited to primipara in whom a sharp edge of tough, resisting tissue was found at the external os. Incisions were made laterally and posteriorly, but not anteriorly, to avoid wounding the bladder. These incisions were not closed after delivery. The indications for the operation were: fever in 13 cases, eclampsia in 102, uterine rupture in 1, asphyxia in 2, rigidity of the cervix in 4. The operations employed for terminating labor after incision were: forceps in 23, version and extraction in 2, perforation in 3, and spontaneous labor in 2. The

mortality among the mothers was 2 from eclampsia. The morbidity was 30 per cent. So far as the after effects were concerned no injurious after effects were observed in any of the cases. Of the children 76 per cent. lived and 23 per cent. were stillborn.

5. *Vaginal Cæsarean section* was performed by separating the bladder and by incising the cervix anteriorly to the border of the peritoneum.

The operation was done seven times; twice for carcinoma of the cervix and five times for eclampsia. When the cervix was tightly closed the beginning of dilatation was made by the use of Hegar's dilators to provide for the escape of lochia. The placenta was delivered before the incisions were closed and the uterus was tamponed with iodoform gauze. In the two cases of carcinoma of the cervix the uterus was extirpated through the vagina after the delivery of the child. One of these patients lived four months and the other six months after the operation, both perishing from cancer. Of the five cases of eclampsia three died. Three of the children were born living and four were stillborn.

In reviewing the results of these various methods it was observed that dilatation by Bossi's dilator was complete in thirty minutes on an average with 33.3 per cent. of laceration. Dilatation with the body of the child occupied on an average two hours with 29 per cent. of laceration. Dilatation with elastic bags consumed seven and one-half hours with 24 per cent. of lacerations.

Septic mortality of the mothers after incision of the cervix was nil, after dilatation with Bossi's dilator was nil, after the use of the elastic bag it was 3 per cent., after dilatation with the body of the child it was 2 per cent., and after vaginal Cæsarean section it was 4 per cent. The morbidity ranged from nothing to 39 per cent. The lowest mortality rate in eclampsia was seen after dilatation with Bossi's dilator, whilst the highest mortality rates after eclampsia occurred after the use of elastic bags. Probably the length of time required for the use of these bags increased the mortality. The mortality among the children in eclampsia was 100 per cent., when the child's body was used as a dilator, and 20 per cent. when the cervix was opened by incisions. In placenta prævia the best results for the mother were obtained by using the child as a dilator, with the highest foetal mortality. In infection the best results for the mother were obtained by dilatation through incisions and the results for the child were also the best. It is thought that vaginal Cæsarean section should be limited to hospitals but that the other methods are available in private houses. Bossi's dilator should be used by the specialist only, on account of the danger of severe laceration which accompanies its use.

Dührssen<sup>1</sup> protests against the opinion expressed by Knapp concerning

<sup>1</sup> Surgery, Gynecology and Obstetrics, March, 1906.



the Bossi method. He considers it entirely too optimistic, and believes that his operation of vaginal Cæsarean section has received indisputable recognition as the universal method.

Leopold limits his recommendation of the Bossi instrument to the general practitioner, only to be used in cases of effaced cervix and then only when in a great hurry. The writer declares that the impracticability of the method keeps him from using it and has led him to introduce the methods of deep cervical incisions in cases of effaced cervix, vaginal Cæsarean section in cases of an ineffaced and rigid cervix, and metreuryesis with automatic traction for an ineffaced but dilatable cervix. The second method is reserved for specialists, the other two can be carried out by any general practitioner who has had a surgical training and who operates antiseptically. The writer states that his operation of vaginal Cæsarean section and Gigli's pubiotomy are the operations which solve the original problem of obstetrics—how to empty the uterus before the beginning of labor, in all cases of danger to mother or child, in the shortest time, by the natural passages, and without danger to mother or child in all cases of obstruction to the birth canal, by the soft or bony parts. He believes that these two methods will almost wholly take the place of Bossi's method, induced premature labor, craniotomy on the living child, symphyseotomy, and classical Cæsarean section. According to Dührssen artificial dilatation of the cervix is accomplished more quickly and safely by means of deep cervical incisions and vaginal Cæsarean section than by Bossi's method.

The complications to be feared in the use of the Bossi instrument are deep cervical lacerations, which may extend into the surrounding structures, and a retraction of the cervix after dilating and resulting inability to deliver the child. The results of the use of the Bossi method in ten cases of ineffaced cervix in primipara were as follows: Four children were born dead, one mother died of pyæmia following excessive manipulation of the cervix, and another mother suffered from a life-endangering tear.

Dührssen's principle is that in every operation for the delivery of a child care should be taken that the mother be protected, but that this protection of the mother should not be obtained by sacrificing the life or health of the child. The subcutaneous pubiotomy of Gigli is welcomed by the writer as an operation which will take the place of the classical Cæsarean section.

The total number of vaginal Cæsarean sections known to the writer is 270, with thirty-six deaths; a mortality of 13.3 per cent. Among these are fifty cases of radical vaginal Cæsarean section (Cæsarean section with subsequent extirpation of the uterus), with five deaths, a mortality of 10 per cent.

**AFTER RESULTS OF THE BOSSI METHOD.** This operation has had to contend with fierce opposition, especially in Germany. Bardeleben among others reports his experiences with a series of cases and deduces his results. His series consisted of six cases and his criticism is unfavorable. Lichtenstein<sup>1</sup> attacks Bardeleben's deductions and says that the number of cases reported is too small to give an accurate deduction, that the resulting tears were not necessarily due to the instrument, and that the after effects upon the patients were severe because the tears were not immediately sutured as recommended. This writer had observed eighteen cases in which the Bossi instrument had been used. In none of the cases did tears result, and all the patients were practically without symptoms. Of seven other cases seen by him, four had small tears, two large ones, and the remaining one a bilateral tear. Interference with conception and subsequent pregnancy could not be proved. The main considerations are a definite indication, patience, time, and the proper instrument, such as the perfected Bossi dilator or that of De Seigneux.

**Lateral Subcutaneous Symphyseotomy (Pubiotomy).** **HEBOTOMY.** Extra-median symphyseotomy or hebotomy bids fair to replace symphyseotomy and has been discussed frequently of late. The subcutaneous operation with Doederlein's hollow needle carrying the Gigli wire saw seems to be the most popular method. Recent reports show the range of pelvic narrowing to which this operation is applicable to be from 7 to 8.5 cm. Waldstein<sup>2</sup> declares that it increases the conjugate vera in the normal pelvis 8 per cent. of its length; in the rachitic pelvis over 25 per cent. Stoeckel<sup>3</sup> believes that the gain is substantially less than after symphyseotomy and that pubiotomy is best employed for conjugates ranging between 8 and 8.5 cm. and symphyseotomy for conjugates between 7 and 7.5 cm. Rosenfeld<sup>4</sup> finds that both oblique diameters are increased in the same manner as the conjugate in the simple flat pelvis, while in the generally contracted flat pelvis the diameter opposite to the section is most increased, *i. e.*, the bisected side is wider. The increase in the conjugate is for the most part at the expense of the sacroiliac joint, hence the operation should be performed on the side through which the biparietal diameter of the head must pass.

Another practical point discussed in recent reports is that of artificial or spontaneous delivery of the child after the section of the pubic bone. The evidence thus far presented certainly favors spontaneous delivery whenever it is possible. There is less danger to the child and the gradual distention of the pelvis and soft parts is certainly less dangerous for the mother. In multiparæ the condition of the soft parts will often

<sup>1</sup> Archiv f. Gynäkol., vol. lxxv., No. 1.

<sup>2</sup> Zentralblatt f. Gynäkologie, xxx., 7.

<sup>3</sup> Ibid., xxx., 3.

<sup>4</sup> Ibid., xxx., 3.



permit immediate delivery. Sellheim<sup>1</sup> finds that if the separation at the point of incision is equal, the degree of pelvic enlargement is the same whether the joint (symphyseotomy) or the pubic bone (pubiotomy) is severed. This seems likely since the distance between the incisions is not more than 2 cm. He advises against the employment, after either section of the joint or of the pubic bone, of the Walcher posture, declaring that it is not only superfluous but is positively dangerous to the integrity of the capsular ligaments.

In a discussion of the anatomy of this operation J. Tandler<sup>2</sup> states that following this operation there is a loss of valuable support to the vagina, due to the ligamentum arcuatum and transversum, to which the fibres of the deep transversus perinei are attached, being torn away. The urethra does not lose its support behind the symphysis as it does in the median operation. Further, he believes that the injury to the transversus perinei and the levator ani predisposes to uterine prolapse.

Sellheim<sup>3</sup> uses the following technique. A small skin incision is made over the tubercle of the pubic bone; the Döderlein needle is introduced along the posterior wall of the pubic arch guided by the gloved index finger. The tissues are perforated close to the inferior border of the pubic bone and near the labium majus, the needle is brought out through a small counter opening, and the Gigli saw introduced along this track. The bone is sawed, both wounds in the skin are immediately sutured with catgut and closed without drainage.

There was very little hemorrhage at the site of the skin incision, but in all his cases there was hemorrhage at the cut ends of the bones, the hæmatoma varying in size from an egg to the size of a fist. The smaller ones disappeared almost entirely in the first or second week, without any rise in temperature. The largest hæmatoma, which was the size of a fist, caused a temperature of 38.5 C. (101.3° F.). The patient was up on the fourteenth day, but on the twentieth day developed a thrombosis of the left femoral vein, the side upon which the operation was done. This caused him to investigate the anatomy of these structures closely with the idea of avoiding such hæmatoma and possibly more serious trouble. From this investigation he has evolved the following rules as to technique. An arterial plexus of good size lies on the posterior surface of the symphysis, supplied by branches from the epigastric and obturator arteries. This must be pushed to one side by the operator's finger and the Döderlein needle carefully passed to avoid hemorrhage. The saw should not be placed too close to the obturator foramen, lest the obturator vessels be injured. The safe distance is within 2 cm. from the median line. The

<sup>1</sup> Beitr. z. Geburtshülf., x, 3.

Centralb. f. Gynäkol., 1905, No. 28.

Ibid., 1905, No. 36.

bleeding from the cut ends of the bone will be the same at any point the incision may be made. Anteriorly and below the body of the os pubis is a small plexus of veins which is cut by the saw as it emerges from the bone. If not cut by the saw it will very likely be ruptured as the sawed ends of the bone are separated. Care must be used in cutting through the bone. If the incision be not made deep enough, the pelvic bones will be prevented from spreading by the ligaments. An attempt should be made to separate the bones before withdrawing the saw. The needle should be passed under the guidance of the finger lest it be passed through the obturator foramen. In spite of the occurrence of hæmatomata, Sellheim believes that hebotomy has enough advantages to be preferred over symphyseotomy. Tandler found that the true conjugate was increased 0.4 and 0.5 cm. when the ends of the bones were separated two centimetres. In one instance when the ends of the bones were separated 4 cm. the true conjugate was increased 0.7 cm. The transverse diameter was increased 0.8 cm. in two cases where the separation of the ends of the bones was 4 cm. Waldstein<sup>1</sup> declares this estimate of enlargement entirely too low. The side upon which the incision was made had the greatest gain in the diagonal, due to the sacroiliac joint giving more on that side, hence he recommends that the operation be performed upon that side in which the biparietal diameter of the head lies, since the widening will be the greatest there.

Kaunegiesser<sup>2</sup> reports twenty-three cases from the Dresden clinic, the conjugates ranging from 7 to 8.5 cm. There was no maternal mortality; four children were lost. Seven cases had puerperal complications as follows: one gonorrhœal abscess of the knee with subsequent ankylosis; one hematoma of the labia majora; one thrombosis of the veins of the legs; four cases of bladder injuries. After the cervix had completely dilated, the section of the pubis was made and operative delivery was employed. Döderlein<sup>3</sup> reports sixteen cases, of which all the mothers and fifteen babies lived. His experience has made him agree with Zweifel that operative delivery should only be undertaken when specially indicated. Jessen<sup>4</sup> reports an interesting case in which hebotomy was attempted and because of serious hemorrhage and breaking of the saw before complete section of the bone, the wound had to be closed at once and symphyseotomy was substituted. During the forceps extraction both the cervix and vagina were lacerated at a point corresponding to the pubiotomy wound. The wound through the symphysis healed rapidly, but the sawed portion of the pubic bone failed to unite, no callus being produced and tenderness persisting for a long time.

<sup>1</sup> Loc. cit.

<sup>2</sup> Zentralbl f. Gyn., xxx., 3.

<sup>3</sup> Archiv. f. Gyn., lxxviii., 1.

<sup>4</sup> Ibid., xxx., 8.



Aubert<sup>1</sup> concludes from a careful study of this operation as follows:

1. The vesical and urethral supports are not injured and the structures behind the symphysis and the clitoris are not injured because the section is not made in the median line, while in symphyseotomy these structures, if not cut, are apt to be lacerated by the bilateral traction.

2. Severe hemorrhage is not likely to occur, although the end of the corpus cavernosum may be cut. Experience has shown, however, that the loss of blood is almost always slight and readily controlled.

3. Too great separation of the bones is prevented by the tension of the attached muscles and is further limited by the subcutaneous method of operating.

4. An open or subcutaneous section of bone unites more promptly, and the danger of infection is less than occurs in a gaping wound of a joint.

5. Hebotomy replaces Cæsarean section for the relative indication (conjugate vera to 7 cm.), many cases of embryotomy, and induction of premature labor.

6. Sepsis is not a contraindication.

7. The maternal danger is very slight and it gives the child its best chance to be born alive.

8. Vaginal lacerations and unavoidable hæmatomata, which under modern aseptic management give no serious results, are its only disadvantages. His enthusiastic review of the operation concludes with the hope that Gigli's saw and Döderlein's needle will eventually be substituted for the mutilating instruments in every obstetrician's armamentarium.

**Rupture of the Symphysis Pubis.** T. B. Eastman<sup>2</sup> believes that this accident is not always recognized and that its importance as nature's method of terminating certain difficult labors is not appreciated.

Spontaneous rupture is not so rare relatively as has been stated by some authors. The rupture takes place ordinarily in the interosseous cartilages and ligaments, or between one articular surface and its opposed cartilage, and at times occurs as a fracture of one of the pubic bones. The pelvis is normally a rigid body. In pregnancy this rigidity gives way to a certain extent, due to the swelling and softening of the pubic and sacroiliac joints. If this condition be exaggerated into a pathological state it may bear an important part to the etiology of this accident. Inflammation of the pelvic articulations, either acute or chronic, may be another cause. Osteomalacia may be a predisposing cause, also the form of the pelvis.

Rupture occurs most often as the result of a generally contracted

<sup>1</sup> *Revue Méd. de la Suisse Romande*, 1906, No. 1.

<sup>2</sup> *New York Medical Journal*, January 20, 1906.

pelvis, more often than as a result of osteomalacia. The narrowed transverse diameter is common to both the osteomalacic and just minor pelvis, and herein lies the most important cause of the separation. The downward pressing part, generally the head, wedges itself into the narrow transverse diameter and there results a bursting of the symphysis, and secondarily, a rupture of one or both of the sacroiliac synchondroses, since space cannot be created by the changing form as in the osteomalacic pelvis. The fact that a rachitic pelvis is ordinarily much thicker and firmer than the normal pelvis renders the liability less remote in this condition. According to De Lee the shape and size of the pelvis have much to do with the likelihood of separation of the articulations. Since the disrupting force is that of a wedge, and the pubic joint will give most to a force which pulls the bones laterally, one from the other, it follows that those pelvises are most susceptible to the injury where the head can expand the sides. The generally contracted pelvis is the one usually found in these cases. In the flat pelvis, on the contrary, where the narrowing is in the anteroposterior diameter, the head needing no expansion of the sides, the rupture rarely takes place, though in many of these cases very powerful efforts at delivery are made. These may result in fracture of the bones as often as rupture of the joint. The bones of the rachitic pelvis are often stronger and thicker than those of a normal skeleton, but cases are not few where the opposite is true. Funnel-shaped and kyphotic, laterally contracted pelvises should be particularly liable to rupture, but, probably owing to the rarity of these visitations, the reported cases are few.

No one condition or circumstance can be responsible for this accident. Given a large head, a badly engaging head, a prolonged labor, an unskilful forceps delivery, or all present in a single case, with a pelvis the ligaments of which have undergone radical changes, a malformed pelvis, or one of the articulations which is the seat of inflammatory changes, or malignant new-growth, and we have a combination of conditions and circumstances very likely to result in rupture.

In the cases of the so-called silent rupture, particularly if the patient be anæsthetized, the accident is ordinarily overlooked. It is not until the patient attempts to move that the full import of the injury is realized. Any attempt to sit up produces a grating, scraping sensation accompanied by great pain in the region of the symphysis and often at the right hip. The patient lies flat on her back with the limbs rotated outward. If the bladder or urethra be injured the condition assumes at once a more serious aspect. Treatment has consisted chiefly in immobilization of the pelvis to such an extent as possible by binders; plaster-of-Paris casts have been tried but found impracticable. If after one year union does not take place, the symphysis should be cut down upon and the



separated ends sutured. The writer reports a case which came under his care. The patient, aged twenty-seven years, was pregnant for the second time. Twenty minutes after the beginning of her labor pains she was suddenly seized with a terrific pain, and gave birth to a nine-pound child. The instant before the birth a snapping noise was heard throughout the room. Her recovery, so far as ordinary postpartum conditions were concerned, was uneventful. On attempting to walk she was unable to control her limbs, and complained of a sinking sensation about her pelvis, while any considerable movement of her body produced a grating sensation at the symphysis. Upon examination distinct motion could be elicited at the symphysis. A crescent-shaped incision four inches in length was made following the curve of the pubic arch, exposing the anterior surface of the bodies of the pelvic bones. The ends of the bones were found separated about one inch and a quarter, while the intervening space was filled with a semisolid substance which was readily removed with the handle of the scalpel. Two holes were drilled through the bone on either side, from a point on the anterior surface one-half inch from the articular surface and emerging on the posterior surface one-fourth inch from the articular surfaces. The posterior surface was not exposed. Heavy silver wire was passed through these holes and after scraping the articular surfaces thoroughly they were brought into close apposition. Union was perfect in thirty-six days. The writer claims that this method of making the incision minimizes the danger of injury to the vessels of the clitoris, also to the injury of the bladder.

**Dwarfs Considered from an Obstetrical Point of View.** Herrgott<sup>1</sup> confines himself mostly to the clinical side of this subject, and groups dwarfs into two varieties, physiological and pathological. Physiological dwarfs are found in the interior of Africa, and have been described by Schweinfurth and Verneau. The pelves of these little people seem to be normal in proportion to their stature, and they do not suffer obstetrically. Pathological dwarfs, on the other hand, are very different; these the author describes and gives interesting details as regards their obstetric histories.

Foremost among the causes leading to "dwarfism" are lesions of the thyroid gland. In myxoedema there is a general arrest of development, though along with it fecundation is extremely rare. Details are given by Herrgott of the labor of a myxomatous dwarf, aged eighteen years. The labor was spontaneous but difficult. The pelvis was generally contracted and of an infantile type. The mother's height was only 1 m. 21 cm. (4 feet, 5 inches); the child weighed 2500 grams (78 ounces) at birth. Radiography showed absence of fusion of the ilium, ischium, and os pubis in the cotyloid cavity.

<sup>1</sup> *Annal. de Gynäkol. et d'Obstet.*, January, 1906.

The pelvic measurements were: intercrystal, 22 cm.; interspinous, 20 cm.; external conjugate, 16 cm.

Rickets is the cause of a more frequent variety of pathological dwarfing. In these cases the pelvic contraction is often very marked. In rickets various causes lead to skeletal deformity, such as arrest of development, unequal growth combined with a softening of the bone, results due to body weight, and lastly, muscular contraction. In some rickety dwarfs the pelvis is generally contracted, but maintains its "perfection of form." (Naegele.) Here arrest of development is the only cause. In other cases the pelvis is flattened as well as contracted, the factors of the condition being the results of body weight on softened bones. Obstetrically considered such pelves are very dangerous.

Achondroplasia is another interesting cause of dwarfing. A rarer condition still is the curious congenital osseous dystrophy, described by Porak and Durante as "*dysplasie periosteale*." In this disease there is a defect in the periosteal ossification with integrity of chondral deposits. The lesions of the diaphysis observed result rather from an excessive absorption of new-formed bone than from the absence of periosteal formation. The bones are fragile and fractures are common, though they soon reunite. In true achondroplasia the growth of osseous tissue on the shaft side of the epiphyses of the long bones, both of the arms and legs, is defective, though the epiphyses are normal. The limbs are short and stunted, and the figure correspondingly dwarfed. The hands are curiously like a "trident" though the upper part of the skull and face may be fairly developed. The author describes a very interesting case of achondroplasia upon whom he twice performed Cæsarean section. She was 1 m. 10 cm. ( $3\frac{1}{2}$  feet) high. Her father, aged fifty-three years, was also an achondroplastic dwarf, height 1 m. 6 cm. (3 feet, 3 inches). His father was a dwarf and also one of his maternal aunts, who died during her second confinement. One of the patient's uncles was a dwarf, but lived to a great age. He had several children, all dwarfs. All the girls after marriage died in childbed. One of her aunts was a dwarf and died at the age of twenty-two years, in confinement. The father of the patient was married at the age of nineteen years, his wife being an ordinary sized person. She bore twelve children by him, and had three miscarriages. Four children died young; of the eight living, five were normally developed and three were dwarfs, one of these being the case he attended. The patient's pelvic measurements were: intercrystal, 21.5 cm.; interspinous, 19 cm.; diameter Baudelocque, 14.5 cm.; and the diameter utile, 69 mm. Her first child weighed 3000 grams (8 pounds), the second 3050 grams (9 pounds), and both lived. The author remarks on the peculiar fecundity of achondroplastic dwarfs as opposed to those affected with rickets.



In achondroplasia and rickets (with arrest of development and bone softening) Cæsarean section is probably the only operation worthy of consideration in delivery. The induction of premature labor is useless, and symphyseotomy at term does not give sufficient space. In ordinary rickets (without arrest of development and bone softening) induction of premature labor, symphyseotomy or forceps may succeed, as the pelvic deformity is less marked. In myxœdematous dwarfs (in which fecundation is the exception) the pelvis is not often markedly deformed, and their confinements may terminate naturally, though with some difficulty. In the dwarfs which the author terms "physiological dwarfs" no difficulty at all is usually met with.

**Cæsarean Section.** Olshausen<sup>1</sup> reports 118 cases of Cæsarean section operated upon in his clinic by himself and assistants. The indications for the operation were: contracted pelvis, 91; eclampsia, 7; myoma, 6; carcinoma uteri, 4; vaginal fixation, 4; nephritis, 2; heart disease, 2; scar contractions in cervix and vagina, 2. Of the contracted pelvises, 71 were rachitic. The operation was done five times for small round pelvis (four patients); five times for obliquely contracted pelvis (four patients); twice for transversely contracted pelvis (in same subject); twice for pseudo-osteomalacia; three times for scoliotic pelvis; once for kyphoscoliotic pelvis; and twice for tumors of the bony pelvis.

Olshausen does not lay down a hard-and-fast rule when and when not to operate in eclampsia. He says that with a vertex presentation and a well-dilated os the accoucheur will, of course, hasten labor by applying the forceps or turning and extraction. When the cervix is expanded, but the os not sufficiently dilated for extraction, incision or dilatation by Bossi's method is called for. In other cases of an apparently mild type, especially in multiparæ and primiparæ with dilatable soft parts, it is sufficient to rupture the membranes. In severe eclampsia at the beginning or before the onset of labor, Olshausen considers Cæsarean section, either abdominal or vaginal, the correct treatment. He performed vaginal Cæsarean section twelve times in 1904 for eclampsia, with three deaths. He has performed the classical operation for the same disease, seven times since 1895. Two patients died, one of eclamptic coma a few hours after the operation, the other of hypostatic pneumonia two days after delivery.

With regard to the children in cases of Cæsarean section for eclampsia the writer found them frequently in a state of morphine narcosis, and remarks that this condition may easily be mistaken for asphyxia. The abdominal incision should be made very high up and end 8 cm. above the symphysis pubis. The uterus is then turned out through the wound,

<sup>1</sup> Zentralb. f. Gynäkol., 1906, No. 1.

a mattress sponge inserted behind it, and the upper part of the wound brought together by clamps. The placenta can almost with certainty be avoided by noting where the largest veins are situated in the uterine wall. If the anterior wall of the uterus is more markedly convex than the posterior it is nearly certain that the placenta has an anterior insertion. The course of the round ligament is a most unreliable guide. After finding the placental site, a sagittal section is made through the fundus and prolonged on the side unused by the placenta. It is as easy to incise the posterior as the anterior wall of the uterus.

For hæmostasis, 2 grams ( $\frac{1}{2}$  dr.) of a 6 per cent. watery solution of ergotin is given twenty minutes before the operation is begun. This is repeated if necessary while the operation is going on. Cervical compression of any kind is unnecessary, as it leads to hemorrhage when discontinued. Olshausen uses soft catgut, sterilized in alcoholic phenol solution. Silk, he claims, leads to a fistula. Eight, ten, or twelve sutures are used to unite the muscle, and stress is laid upon the inclusion of a wide area of muscle. The peritoneum is closed by looped sutures. The writer had one small rupture occur in the fourteen cases where he has performed the operation for the second time; this he attributed to an insufficient amount of muscle being included in one of the ligatures. In seven women the operation was twice performed; in two, thrice; and in three, four times repeated. Contracted pelves were the indications and all operations resulted in recovery. Sterilization by partial tubal excision was performed four times. Of the ninety-one operations for contracted pelves, nine terminated fatally.

CÆSAREAN SECTION ON THE DYING. Futh<sup>1</sup> performed this operation upon a moribund case and reports the operation, giving his conclusions. The patient was a multipara, having borne six children, and was thirty-five years of age. She was brought to the hospital suffering with marked dyspnœa, which had existed for two weeks. The heart was greatly enlarged, there was a systolic mitral murmur, and the lungs were involved, rales being heard at both the apices and bases.

While lying quietly in bed a sudden intense dyspnœa developed and she expectorated about a half-litre of a clear fluid from the lungs. She became rapidly cyanotic and in spite of treatment soon lost consciousness. When she was pulseless and totally unconscious the operation was begun. The child was delivered asphyxiated, with a slow pulse, but was resuscitated. The mother gradually regained consciousness, but her pulse remained fast and weak and her temperature rose. Death occurred suddenly five days after the operation. The autopsy revealed an ulcerative endocarditis; both mitral and aortic valves were involved. The

<sup>1</sup> Zentralb. f. Gynäk.



kidneys contained embolic infarcts. The writer urges a timely operation, with the idea of saving the child and of being possibly of some use to the mother. The results of Cæsarean section on the dying are very poor, for usually the operation has been performed too late. Futh maintains that it is not right to await the advent of the death agony, and the statistics seem to bear out this contention. Out of three hundred and thirty-one cases operated upon, only seven children were saved. In private work a physician should not undertake this operation alone on account of the possible unpleasant results which might follow.

**Diagnosis and Treatment of Rupture of the Uterus.** Schmauch<sup>1</sup> defines rupture of the uterus as tearing of the uterus above the vaginal portion, occurring spontaneously or by violence during labor. Perforation of the uterus resulting from pressure is not considered as properly belonging to the ruptures. Next to sepsis and eclampsia, rupture of the uterus has the greatest mortality during labor. As a general average, the proportion of cases is 1 to 1500. The complete perforating ruptures are found about four times as often as the incomplete ones. Little is known of the mechanism of the rupture of the uterus, postmortem inspection and clinical observation have availed little in its determination. As to the form of the tear, it makes no difference whether it occurs spontaneously or by violence. The most severe and irregular tears occur spontaneously. This is undoubtedly caused by the tremendous difference in pressure, a change of highest tension to complete relaxation at the moment rupture occurs. The mechanism of the typical tears of the lower uterine segment, expansion tears, represents the teaching of Bandl. The symptoms of overdistention, the ascension of the contraction ring and its oblique course, the tension of the round ligaments even between the pains, enables the obstetrician to forestall or diagnose the rupture.

According to Bandl rupture of the uterus during labor will occur under the following conditions, namely, when the presenting part meets abnormal resistance, either by its own size, by contraction of the pelvic inlet, by obstruction of the pelvis by tumors or by malpositions, such as oblique and transverse presentations. A contracted pelvis is the most frequent cause, there being one rupture of the uterus to one hundred labors in contracted pelvis. As far as the normal uterus is concerned, when there is no overdistention there will be no rupture. A previous overdistention, however, will produce lasting damage, furnishing a predisposition to rupture. Predisposition as a causative factor in rupture is now generally recognized. Although not every case shows histological changes, we must consider it a general rule that spontaneous rupture of a normal uterus without previous injury, must be regarded as an exceedingly

<sup>1</sup> Surgery, Gynecology and Obstetrics, September, 1905.

rare occurrence. Gynecological operations also create predisposing conditions. These are the rupture following fixation of the uterus for the correction of malposition, Cæsarean section, deep cervical incisions, the so-called Dührssen incisions, amputation of the portio, adnexial operations with cuneiform incisions, the use of Bossi's dilator, Tarnier's *écraseur*, perforation of the uterus by probe and dilator, and the curettage of the puerperal uterus. Every lesion of the uterine muscle leads to a permanent loss of substance, repair taking place by the formation of connective tissue which leaves a point of least resistance. The typical rupture of Bandl takes place in the overdistended uterus, before the presenting part has passed the pelvic brim. When rupture occurs after the head has entered the true pelvis, or is visible at the vulva, it is explained by the theory that the tear occurred in an old scar or represents the final enlargement of a previously existing fissure. The participation of the vaginal fornix in spontaneous rupture depends entirely upon the tension of the vault and the tearing force. Any portion of the uterus having undergone pathological changes may tear at any stage of labor. A rupture of the fundus may occur under these circumstances, although as a rule it occurs during pregnancy.

Ruptures occurring in the third stage of labor are always due to violence, and are mostly due to the results of manual detachment of the placenta. The writer differentiates between complete and incomplete ruptures; in other words, those with or without opening of the peritoneal cavity. The peritoneal covering may tear and these fissures may become external, incomplete tears involving the greatest part of the musculature down to the intact decidua. This variety may terminate fatally by hemorrhage. In the variety of tear, where the peritoneum is but slightly attached to the muscle, the muscle tears first, a hæmatoma forms after this; in the second variety, where the tear has its origin in a portion of the uterus whose external layers are closely united to their peritoneal covering, the peritoneum must tear first. Here the formation of a hæmatoma is impossible.

The diagnosis of uterine rupture during labor is made when the symptoms of threatening rupture are followed by the symptoms of rupture proper. Bimanual examination will confirm the diagnosis. The symptoms of threatening rupture are only found in those cases of spontaneous rupture where a normal uterus has been subjected to labor for an excessively long period of time, as in obstructed labor. The larger the number of previous labors the shorter the period between occurrence of rupture and onset of labor. The same holds good with ruptures occurring in old cicatrices no matter what their origin. In multiparæ or women where an anamnestic possibility of pathological changes of the uterine muscle exists diagnosis must be based upon the symptoms of rupture proper



in the absence of those of overdilatation. The following symptoms pertain to the child as well as to the mother. The child may suddenly become mobile, the presenting part retract, and one may palpate the foetal parts outside of the uterine cavity. The forelying part may deviate if great disproportion between it and the pelvic inlet exists and come to lie in the iliac fossa. When, however, the foetal head has entered the pelvic inlet and has been fixed by a number of pains after rupture of the membranes a retraction will occur only by abnormal distention and relaxation of the uterus, produced by accumulation of blood in its cavity, premature detachment of placenta, or by rupture. The natural tonus of the uterus, present also between pains, is absent, likewise the intrauterine pressure is altered in both cases. Premature detachment of the placenta causes an increase of intrauterine pressure and the foetus becomes movable by the increase of the uterine contents. Rupture of the uterus renders intrauterine pressure negative. The palpation of parts of the foetus external to the uterus is a pathognomonic symptom. As soon as rupture has occurred and the child has passed into the abdominal cavity in part or whole, placental circulation is so seriously disturbed by the change in intrauterine pressure that, as a rule, the child dies. If rupture occurs during operative delivery the child may live. The surrounding of the child by intestines changes the percussion note to tympany, on top as well as laterally. The detachment of the placenta may lead to a prolapse if the presenting part permits it. Experienced obstetricians have erred in their diagnosis in such cases, thinking it was a placenta prævia or prolapse of the placenta. The second cardinal symptom is the hemorrhage. This may be external, subperitoneal, or intraperitoneal. Only very sudden and large tears tend to open large vessels. A rupture in old cicatrices or in defects in the muscular substance occurs very gradually, and there is almost no hemorrhage on account of the anæmic state of the cicatricial tissue. The soft and weakened wall of the uterus of a multipara may also tear without much hemorrhage. The site of the tear also influences the hemorrhage. In tears with irregular edges hemorrhage ceases soon, whereas torn vessels exposed by the tear bleed excessively. Fatal hemorrhages may occur in such cases as late as the sixth or seventh day, by detachment of the thrombi. External hemorrhage is the chief symptom of incomplete rupture. The mobility of the presenting part is not so pronounced in these cases. Danger of fatal hemorrhage is relatively greater in incomplete than in complete rupture, 61.5 per cent., 34.4 per cent. Placenta prævia, premature detachment of the placenta, and torn foetal vessels will have to be excluded in the diagnosis. The diagnosis of internal hemorrhage during labor at term is based chiefly on general symptoms. Incomplete tears are often accompanied by subperitoneal hemorrhage lead-

ing to hæmatoma, and may be mistaken for the bladder, as mentioned before.

The subperitoneal anteuterine emphysema is pathognomonic for rupture. In case of bladder involvement no urine is secreted, and catheterization yields but a few drops of bloody urine. The cessation of pains after rupture is another classical symptom, but Schmauch refutes this as not applying to longitudinal and incomplete tears. It does not apply to the larger tears, especially those of the transverse variety. The signs of internal hemorrhage and the patient's statements must be considered. She may have felt a piercing pain at the height of a labor pain, and felt that the child had receded; she will also be tender over the site of the rupture.

Symptoms of collapse, due to loss of blood and shock, supervene. The diagnosis should be made before collapse occurs, else treatment will be instituted too late. The pulse becomes small and frequent, followed by pallor of the face, fainting spells, yawning, air hunger, and fear of death. The more sudden these phenomena occur the more striking they become.

A positive diagnosis is obtained by the objective findings on bimanual palpation. In the majority of cases the diagnosis of rupture *per se* must suffice, to be followed by immediate delivery.

An unexpected hemorrhage during the performance of high forceps delivery, version, or craniotomy makes the event of rupture highly probable. We must first find the seat of the hemorrhage, and the diagnosis is made by a digital exploration of the cervix with rubber gloves. Many incomplete tears are never recognized and some cases of sudden death after delivery are undoubtedly due to tears which pass unrecognized. In conducting the treatment a suitable prophylaxis is first and foremost. The woman must be delivered in a quick and careful manner before active interference. Mutilating operations, such as craniotomy in head presentations and embryotomy in impacted transverse presentations, are first in order. Forceps are, as a rule, of no avail. Version is indicated if a foot can be reached easily and only a small portion of the child is within the abdominal cavity. Laparotomy is indicated when the child is to a great extent or entirely within the abdominal cavity. Prevention of exsanguination is the primary object. If the bleeding points are not easily reached, tamponade of the tear should be done at once. If the parametrium is opened we must also pack it. Compression of the uterus in anteflexion against the symphysis and the vaginal tampon by means of wads of cotton and bandaging will prove a valuable adjunct in anterior tears; in posterior tears fixation in retroflexion is employed.

If a hospital is within reasonable distance the patient should be trans-



ferred after packing, because of secondary hemorrhage. In excessive hemorrhage, laparotomy is to be preferred in the home, if skilled aid is accessible. In the absence of any possibilities for transfer to a hospital or operation at home, the physician will have to deliver by the natural route, and be content with a tamponade, even if the child has escaped into the abdominal cavity. Quick and appropriate treatment, under such circumstances, gives better results than long inactive waiting for assistance. A tamponade is considered equal to laparotomy if external circumstances do not permit its performance. The tamponade should be introduced with the speculum if possible, the gauze filling the tear and eventually the parametrium; hæmatomata should be evacuated. A tamponade of the uterus is needed only to the extent it aids the packing of the tear; it is removed piece by piece in five or six days. An ice-bag placed upon the abdomen will relieve the pain. Absolute rest is indicated. Peristalsis is arrested by opiates and the bladder is catheterized. Tympanites is combated by strychnine and atropine. Irrigations are only indicated in incomplete tears.

The decision as to whether drainage or operation is to be employed must be decided by the existing circumstances. The operations mentioned are: 1. Transperitoneal method, with an incision parallel to Poupart's ligament, applicable only in incomplete tears. 2. Suture by vagina, only in incomplete and easily accessible tears. 3. Vaginal hysterectomy, used in anterior and posterior tears, and in fundus ruptures. 4. Laparotomy is the classical operation and it is done with less danger of infection than tamponade, allows of better orientation than any other method, and offers better results in the hands of a conservative surgeon. The literature of the last four years records twelve cases of conservative laparotomy in uterine rupture. All except two were primary laparotomies; one of the latter secondary laparotomies died. To this list may be added ten cases of Zweifel with suture of the serosa and two deaths. The total number is twenty-two cases with three deaths, *i. e.*, 13.6 per cent. Thus it is seen that conservative surgery with proper selection of "clean" cases gives very good results.

The mortality rate of uterine rupture is still very high. Incomplete tears give a better prognosis than complete ones. The writer bases his conclusions upon the statistics of the results of the large European university hospitals. There are 246 cases of complete and incomplete rupture. Of these ninety-one cases recovered, a mortality of 63 per cent. This rate is reduced to 58.26 per cent., when those cases are omitted which died without treatment or during operation. The only modern statistics at hand are those of Schmit, who is an adherent of the tamponade treatment. He had nineteen cases, with a total result of 47.37 per cent. dead, or when the cases which died during operation are deducted, 44

per cent. The operative mortality was 50 per cent., and the drainage mortality, 38.6 per cent.

Krebs reports a series of ten cases of complete rupture, most of them operated on between 1898 and 1904, with a mortality of 50 per cent.

Statistics are presented by the author, which prove that Cæsarean section as well as tearing in some cases totally destroy the fitness of the uterus for subsequent labor, and in most cases diminish it considerably. He says, however, that we are not justified by these reports in declaring total extirpation of the uterus as the only proper procedure. Prematurely induced labor and even labor at term have been brought to a favorable termination for both mother and child. The possibility of a subsequent labor will always depend upon the extension and place of the tear. Lacerations of the lower uterine segment incline more than others to rupture. Although there are no confirmations of the apprehension, the author states that the same consideration would lead to the conception that vaginal Cæsarean section, when performed by one incision, is liable to interfere with the function of the lower uterine segment in a subsequent labor. He believes that the classical Cæsarean section for relative indications will have to be more restricted in future, in favor of pubiotomy, which leaves the bearing organ intact.

Those who desire, after rupture of the uterus, to save their patient from the possibility of pregnancy and its subsequent perils should content themselves with resection of the tubes and adjacent tissue.

In conclusion Schmauch says, in general we may say that we will be compelled to draw upon our entire store of obstetrical knowledge and art in these cases in order to make the labor as easy as possible for the woman, and deliver her instrumentally as soon as there is a possibility of a harmless delivery, be it by forceps or by extraction of the child.

**Puerperal Osteomalacia, Cæsarean Section, Bilateral Oophorectomy.** Rossier<sup>1</sup> reports a patient, aged twenty-nine years, who had previously borne two children, both labors being normal.

The history dated back about four years when she entered the maternity at Basle at full term with all the signs and symptoms of osteomalacia. The skeleton was markedly deformed, the diagonal conjugate was three and one-quarter inches, and the available obstetrical conjugate only one and three-quarter inches. The pelvis was of the crumpled-up type and the symphysis remarkably beaked. Pressure on the pelvic bones was attended with much pain. Cæsarean section was performed and a full-term child delivered alive. Both ovaries were removed; the uterus was closed with catgut and the peritoneum with a continuous gut suture.

<sup>1</sup> *Annal. de Gynecol. et d'Obstet.*, August, 1905.



The patient progressed well, her general health improved, and she left the hospital two months later.

Thirteen months later she was readmitted, the disease had not been arrested by the castration nor had the periods ceased. Pains in the limbs and increased difficulty in walking had been worse for six months previous to her readmission. She now suffered severely and was unable to walk or even move. Measurements showed that there was increasing deformity of the bones and pelvis. As the menstrual periods continued and the patient pleaded for some relief it was decided to do a second laparotomy. This was performed thirteen months after the Cæsarean section, and in the right broad ligament a small nodule was removed which on microscopic examination revealed ovarian tissue. The patient made a good recovery, but later reports are discouraging, as the disease seems to be advancing, the author regards the case as sporadic osteomalacia of a very malignant type.

Taking into account the recurrence of the disease, and the failure of the first operation to suppress menstruation, the author believes that either the disease was of a very malignant type or ovarian tissue still existed at the time of the second operation. The nodule removed at the second operation was found to contain ovarian tissue, but no ovules, and the author believes this to have been a third or accessory ovary. Such ovaries as these are either supernumerary or accessory. Supernumerary ovaries exactly comparable to the two other ovaries are very rare, only accompany doubling of the tubes, and in fact are a deformity *per excessum*. Supernumerary ovaries may result (a) during foetal life by budding out of the connective tissue and inclusion of ovarian substance. They are retroperitoneal if such separation occur early, intraligamentous, if that peritoneal fold is already formed, or lastly intraperitoneal, either completely or partly separated from the normal ovary itself; (b) accessory ovaries may arise in the post-foetal period of life by pathological processes. Accessory ovaries sometimes result from remains of primordial epithelium, either nests of ova, or primitive follicles, being included in the broad ligament itself. In regard to the question of conservative Cæsarean section and oöphorectomy versus Porro's operation in cases of osteomalacia, Rossier prefers the former, reserving removal of the uterus for cases definitely infected before admission or where the risk of infection has taken place.

**Delivery of the Hydrocephalic Fœtus by Spinal Tapping.** Ballantyne<sup>1</sup> reports the details of the operative procedure employed in delivering the after-coming head in a case of hydrocephalus. The patient was a strong healthy woman, aged forty-six years, and neither she nor her

<sup>1</sup> Journal of Obstetrics and Gynecology of the British Empire, February, 1906.

husband had shown signs of any morbid diathesis. She had felt far from well during this her fourth pregnancy. She reached term, and at 6.30 P.M. of November 27th the membranes burst and a moderate amount of liquor amnii was discharged. The patient described the pains as being different from those in former labors; she said they went upward toward the chest instead of downward toward the thighs. Ballantyne was called into consultation on account of a breech presentation combined with a contracted pelvis. He found a greatly distended abdomen with a general, even, and rounded swelling extending up to the ensiform cartilage, fluctuation could be distinctly felt but nothing like a hard foetal head. The legs and body were delivered and the arms brought down, when it was observed that there was a ruptured spina bifida in the lumbar region. The fact that this woman had previously given birth to an anencephalic foetus, coupled with the large size and peculiar feeling of the uterus led Ballantyne to diagnose the case as one of hydrocephalus with the greatly distended head lying above the pelvic brim.

An attempt was made to draw down the head by traction upon the body, but with no effect. The pelvic brim was narrow and the head quite above it, so there was no thought of trying to perforate the foetal head. Ballantyne adopted a method previously used and described by him. An opening was made into the spinal canal, a metal catheter was passed up through the canal into the cranial cavity, the fluid drawn off, and the head allowed to collapse. In this case, the opening in the spinal canal in the lumbar region was utilized. Where such an opening does not exist, Ballantyne would advise making the opening higher up in the dorsal region so as not to use a longer catheter than necessary. The catheter was slightly straightened, passed up through the spinal canal and into the interior of the cranium, here it was passed about in all directions to make sure of reaching all parts of the hydrocephalic sac. The head was then delivered with slight difficulty, the placenta came away a few minutes later, but the membranes were adherent and had to be extracted manually. The hydrocephalic cavity contained twenty-five ounces of a faint yellow colored fluid. The circumference of the foetal head in the occipitofrontal plane was 57 cm. The placenta was large, but rather thin, a peculiarity also noticed in connection with that of the anencephalic foetus, otherwise it appeared to be normal.

This patient's previous obstetric history briefly was as follows:

She first became pregnant in 1895, when she was thirty-six years old. The infant was born dead six weeks before term. No cause for the foetal death was known except a fright. Her second pregnancy was in 1898. She had marked hydramnios and gave birth to an anencephalic foetus which was delivered by forceps. The placenta was large and entirely adherent and had to be removed manually. The placenta was



large and thin, being only one-quarter of an inch in thickness in some places. The patient's third pregnancy ended in the birth of a living male child in 1900. It had no malformations of any kind.

The writer then discusses the tendency of a woman who has once given birth to a monstrosity to repeat. *Recurrent monstriparity* is the term he applies to this occurrence. There seems to be a sex preference in favor of the females shown in these teratological states. It is noted also that the monstrosities in recurrent monstriparity bear some resemblance to each other, if not in appearance, at least in origin. Ballantyne concludes that we are forced to believe that when a woman once has given birth to a malformed foetus it is very likely that she will do so again. Instead of the fact that she has had one monstrosity, making it almost absolutely certain (by the law of averages) that she shall not have another, it rather makes it likely that she will again give birth to a monstrosity although not necessarily of the same kind as before. A monstrosity tends to occur in the same or in an allied form, *i. e.*, anencephalus occurring twice or thrice, or alternately with hydrocephalus and spina bifida. If the monstrosity be of one sex the recurrent malformation will most probably occur in an infant of the same sex.

**The Extraction of the Head after Decapitation.** Ruhl<sup>1</sup> strongly disapproves of the method of Bensinger for extracting the after-coming head. The method consists in seizing the head with toothed forceps and removing it by steady traction, continued for hours or even days. He believes that the chances for sepsis, hemorrhage, or infection are too great by this method.

If systematic and proper measures be taken the head may be promptly removed without any great difficulty. The writer reports several cases to illustrate the results obtained by his method. As soon as the body of the foetus has been removed, the operator places two fingers in the mouth and makes traction on the lower jaw, while the external hand makes strong pressure above to prevent it slipping back. It is extremely important, during this procedure, to bear in mind the normal mechanism of the passage of the head through the pelvis, and to endeavor to make it descend accordingly. When the head is above the inlet of the pelvis it is not advisable to apply the forceps, as they will generally slip off; when, however, the head has once entered the pelvic cavity there can be no objection to using them. In case this method fails the head should be perforated. In doing this the head should be firmly and immovably fixed against the pelvic inlet from above by an assistant. The cranioclast can then be thrust through the mouth, fontanelles, or perhaps the orbit, depending upon the presenting part. After perforation the extrac-

<sup>1</sup> Zentralb. f. Gynäkol., 1905, No. 46.

tion should be accomplished by the cranioclast, and the necessities of the case will indicate the method to be used. When some time has elapsed after the extraction of the foetal body, and the cervix has contracted, it should be dilated with the Bossi dilator. This is easily accomplished, for the amount of dilatation necessary to deliver the perforated head is only three to four fingers' breadth. In cases where there is extreme contraction of the pelvis, vaginal Cæsarean section is indicated.

**The Management of Placenta Prævia.** Fritsch<sup>1</sup> considers placenta prævia centralis the most dangerous of obstetrical emergencies. In almost all other obstetrical emergencies there are definite procedures to be carried out, but in placenta prævia centralis it is often a serious question whether to interfere or to abstain. We have not yet arrived at that stage where, upon making certain the diagnosis of placenta prævia, we may immediately perform vaginal Cæsarean section, with its appreciable dangers in place of the old therapy with lesser dangers. Neither can we follow the old maxim to induce abortion or labor immediately the diagnosis is established in order to save the mother from the evil results of repeated severe hemorrhages, if we consider the life of the child; for it is not absolutely certain that the first hemorrhage will be followed by others.

These questions present themselves to the obstetrician:

1. What shall be done for the bleeding during pregnancy?
2. What is to be done when labor has apparently begun, but the cervix is still too narrow and hard to permit of interference?
3. What shall be done in a case where the labor is unquestionably under way and the cervix is dilating, and a dangerous hemorrhage sets in?

Hemorrhages of varying degree occur frequently during pregnancy. If the bleeding be severe, it indicates that a portion of the placenta, though a small one, must have become separated; otherwise the condition must be due to a carcinoma of the cervix or a ruptured varix of the vaginal wall, both of which are easily diagnosed by vaginal examination. Fritsch has frequently seen cases where, without trauma of any sort, there has been a sudden copious gush of blood from the vagina while the patient was sitting quietly. This ceases, after rest in bed, by coagulation and lessened blood pressure due to the severe loss of blood. Such hemorrhage can, of course, last only a short time, and does not necessarily recur at the time of labor. These are usually caused by a placenta prævia marginalis, as is shown by an examination of the placenta after delivery. The fact that after such a severe bleeding a normal labor with normal child may occur without hemorrhage, in itself speaks against the dictum of inducing abortion or labor after the first hemorrhage. Rest in bed,

<sup>1</sup> Deutsche med. Wochenschrift, 1905, No. 47.



careful competent supervision, preparation for the immediate tamponade in case of recurrence, abstinence from work, coitus, and walking will be the proper course to pursue.

One must also differentiate between new and old blood, for if the dark fluid blood, mixed with small, thin black coagula, pass for several days after the initial hemorrhage, the blood comes from the uterus. This was retained between the uterus, membranes, and placenta. Such bleeding is of no significance. The meaning is quite different if a continuous flow of bright-red fluid blood persist, or if fresh red coagula form in the vagina and are expelled from time to time, for, under such circumstances, the hemorrhage is progressing and the pulse will soon show the effects, and usually uterine contractions begin, the cervix softens and may dilate sufficiently to allow the index finger to enter and palpate the placental tissue.

In other cases this condition does not continue and the cervix closes again, the hemorrhage ceases and labor occurs from four to six weeks later at the proper time, without renewed bleeding. If, however, at intervals of several hours or a few days, repeated and severe hemorrhages occur, the condition becomes dangerous to life, and the vaginal tamponade should be done, unless conditions are favorable and skilled assistance at hand, when immediate vaginal coeliotomy should be the procedure. In case the tamponade is made, certain rules and precautions should be observed. First, asepsis must be absolute, the vulva and anal region must be thoroughly disinfected, and then from time to time they should be again rinsed with a strong lysol solution, for the vulva cannot be as thoroughly sterilized as the hand, so that it will remain so for even many minutes. This will make it pretty certain that practically no contamination will be carried in with the tampon material, which should be moist, but well wrung out, and which should be taken from a sterilized vessel held closely against the vulva. Loose dry gauze makes a very inefficient tampon. Secondly, the patient with bladder and rectum empty, should be in the Sims position, for then the uterus tilts forward, and by strongly retracting the perineum the vagina balloons and makes it possible to pack the whole pelvic space easily, thoroughly and painlessly. The tamponade should be made with the finger and not with an instrument, and should be done very gently, for the puerperal vaginal walls are very soft and friable. Because of this, instruments have injured them frequently, and particularly when a nervous or restless patient throws herself about.

When the vagina is filled with the tampon the patient is placed on her back with the thighs pressed closely together. The uterus then sinks down, the foetal head rests on the tampon, and thus compresses the bleeding spot. An abdominal binder aids in maintaining this pressure. Such

a tampon is efficient, and usually produces enough irritation to the lower uterine segment to induce labor. The pulse and the contractions should then be watched, and the uterus stimulated if necessary, by massage with the finger tips. If after a time the tampon is expelled, the cervix will be found dilated sufficiently to permit of either spontaneous delivery or of the necessary manipulation. If the child should be dead, it is perforated and extracted after pressing the head into the pelvic cavity by the Hofmeier method. If it is certain that the child is not viable it should be perforated in the interests of the mother. Extraction in all of these cases should be made very slowly and with the greatest care because of the liability of severe cervical tears. If the placenta covers the whole cervical opening, a hand should tear through the placental tissue and endeavor to reach the head, while the external hand presses it down into the pelvis.

The worst cases are those in which a dangerous hemorrhage occurs, the cervical canal being still very narrow and the child alive. Here if the placenta is marginal, the membranes should be ruptured and the head pressed into the pelvis, when, frequently, the hemorrhage will stop and the labor will rapidly follow. If, however, it should be a placenta prævia centralis with internal os almost obliterated, though the external os is narrow, the hemorrhage will be severe and quick action will be necessary. Version and extraction should be done. In such cases the child is usually lost, because of the large area of placenta separated from the uterus, or it is born in a condition of asphyxia pallida. The mother is usually out of danger as soon as the uterus is emptied. In cases where the above mentioned conditions prevail, with the exception that the internal os is still narrow and hard, hemorrhage may have to be controlled by operative interference. If the dilatation is made by hand, severe tears will occur. Fritsch, therefore, recommends the use of the hard metreurynter of Ribemonds, until enough dilatation is procured to allow the hand to enter. He advises against the use of the Bossi dilator for this purpose, because dilatation by the hand is safer. The placenta is easily removed in these cases, usually following directly after the child.

CÆSAREAN SECTION IN THE TREATMENT OF PLACENTA PRÆVIA. Briggs<sup>1</sup> characterizes placenta prævia as the most appalling complication of pregnancy and states that the physician must be prepared for every contingency of this multifarious condition. Early diagnosis of placenta prævia is imperative. During the sixth month a thorough pelvic examination should be made in every case of pregnancy. The vaginal examination should be supplemented by a rectal one to determine the condition of the posterior and lower segment of the uterus,

<sup>1</sup> Journal of the American Medical Association, May 12, 1906.



which is difficult or impossible to reach at times by the usual method. The examination should be made bimanually by vagina and rectum, and stethoscopically by the vagina and by the abdomen.

In case of central placenta prævia, elective Cæsarean section of the Sanger type should be done at the moment of greatest viability of the foetus compatible with least danger to the mother. In case the foetus is dead and labor does not set in spontaneously, it should be induced after the placental circulation is shut off. In emergency cases, when the patient is not exsanguinated and a sufficiently experienced operator is at hand, the Sanger-Cæsarean section with a presumably clean or superficially infected uterus should be done, and the Porro-Cæsarean operation if the uterus be positively and deeply infected. (A) In case of total placenta prævia with (1) undilated and undilatable cervix; (2) cancerous or fibroid cervix, pelvic tumors, pelvic contraction, or other obstacle to the usual obstetrical procedure; (3) ruptured sac with escape of amniotic fluid and presenting but undescended head. (B) In cases of lateral placenta prævia with living child, uncontrollable bleeding and either (1) undilatable cervix or other obstacle to the indicated obstetric procedure; or (2) ruptured and emptied sac with presenting but undescended head.

In elective cases complete and thorough preparation should be made, and the operation systematically planned; distinct functions should be assigned to each assistant.

In imperative emergency cases the surgeon must operate with what may be at hand—scissors, hæmostats, needles, thread, antiseptics, and ether. Hemorrhage may be prevented by giving a full dose of ergot hypodermically ten minutes before beginning the operation, compressing the abdominal aorta as soon as the child is delivered, grasping the neck of the uterus low down with both hands and firmly compressing the uterine arteries and by Faradic stimulation of the uterine muscle. Shock may be obviated and relieved by preventing hemorrhage; by rapid operation; by introducing physiological salt solution into the colon, connective tissue, bloodvessels and abdomen; by hypodermic or intravenous injection of adrenalin chloride solution; and by compressing the abdominal aorta. In the after-treatment, purgation should be avoided; colon injections of saline solution, from 8 to 16 ounces, may be given at intervals of from three to eight hours; the bowels may be moved by enemata, epsom salts 2 to 4 ounces, glycerin 3 to 6 ounces, asafoetida mixtures 15 to 30 ounces. On the first evidence of uterine infection prompt and energetic measures of local disinfection should be begun by means of antiseptic exosmosis and drainage.

**Carcinoma of the Rectum in Pregnancy.** Nijhoff<sup>1</sup> presents a review of twenty-six cases of carcinoma of the rectum during pregnancy and

<sup>1</sup> Zentralb. f. Gynäkol., 1905, No. 28.

reports a case of his own. His patient was eighteen years of age, a primipara, in whom labor took place at the seventh month. The child was delivered with forceps and survived; the mother died the day following the delivery. Of the twenty-six cases reviewed, fifteen out of twenty were thirty-five years of age or under, five were primiparæ.

He divides these cases into three groups.

1. Those in which the carcinoma is discovered after the delivery.
2. Those in which an inoperable carcinoma is discovered as an obstacle to delivery at the time of labor or just previous to it.
3. Those in which an operable carcinoma is found during pregnancy.

Such cases as are included in the first group should not occur, since a careful examination by a competent obstetrician should reveal the existence of the cancer. Cases do, however, occasionally occur in which the growth is not discovered until the puerperium or later. If tenesmus or bloody stools occur during pregnancy, they should be regarded as an indication, and a very careful vaginal and rectal examination should be made. In most of the cases of the second group, carcinoma presents a great obstacle to delivery, and only a premature and illy developed child can be born spontaneously. When such a growth exists the child only should be considered, and no operation should be attempted which jeopardizes its life. One should await the normal term of pregnancy, and in the case of a dead child perform embryotomy; in case of a living child, Cæsarean section is indicated. In the living mother, the incision should be made as far away as possible from the diseased tissue, *i. e.*, either on the anterior surface of the uterus or transversely across the fundus. When the uterus is infected the Porro operation is the one elected, and the stump should be treated extraperitoneally.

If an operable carcinoma of the rectum be discovered during pregnancy, the indications are best met by a prompt excision of the growth, though, according to the cases cited, a better prognosis seems to exist when the pregnancy is first interrupted and the excision is done a little later.

In case the child is not viable, the choice must be between delay until viability is established, and immediate interference. The writer feels convinced that the danger of the operable tumor becoming inoperable during the delay is too great to take the chance—and that a slim one—of saving the child.

**Cholecystitis in the Puerperium.** Christiani<sup>1</sup> discusses this complication of the puerperium and reports two cases. He cites Frierch's belief that pregnancy plays an etiological role in cholelithiasis. He does not believe that it is yet determined whether the growing uterus produces hepatic congestion by pressure, with resultant invasion by micro-organisms, and inflammatory changes in the gall-bladder wall, with the later for-

<sup>1</sup> Monatsschrift. f. Geburt. u. Gynäk., Band xxi., Heft 1.



mation of the stones. Perhaps the rapidly changing pressure conditions during labor, causes a migration of the stones with the production of colic. If Fellner's figures (5 cases out of 40,000) are correct, then it would seem that the importance of the etiological relation between labor and cholelithiasis has been overestimated.

Kehr maintains that 10 per cent. of women in the childbearing period have gallstones. Christiani admits only 3 per cent. According to Fellner's figures there should have been 240 cases of gallstones in each 8000 cases instead of one; on theoretical grounds, therefore, he believes labor has no relation to cholelithiasis. Slight meteorism, right sided, uncertain, painful resistance, vomiting and constipation may make one suspect infection. Christiani believes that the small number of cases reported is due to the frequent error in diagnosis. Two signs appear to be of great diagnostic importance; first, the bile-stained vomitus without evident peritoneal disturbance; secondly and principally, the full, slow pulse, which is not in consonance with a fever due to a pyæmia. While we should first think of every fever of the puerperium as a puerperal infection, we must not overlook other diseases and remember that an elevation of temperature may arise from disturbance in the gall-bladder or in the appendix.

As to treatment, it is better in general to employ the knife earlier in the puerperium than at other times. The inflammatory process may more easily be extended to the liver during pregnancy and the puerperium than under normal conditions. Pregnancy and the puerperium do not increase the dangers of the operation.

**Transfusion in Gynecological and Obstetrical Practice.** Burford and Johnstone<sup>1</sup> discuss this subject and give a thorough historical *resume*. Up to 1870 the methods of transfusion of blood had revolved in a narrow circle. It was then that the view arose that fluid loss, not the lack of blood plasma but the lack of a fluid medium for the heart to contract upon, brought about death in cases of hemorrhage. It was then that, among other solutions, normal saline solution came into use. Its use did not become general until William Hunter finally put the question of blood transfusion on a scientific footing. Hunter showed that animal blood had an actually poisonous action on the human organism; that human blood transfused had no nutritive value; that the operation of transfusion of defibrinated blood was not only dangerous in itself, but its use actually connoted additional risk; and that normal saline solution possessed all the advantages and none of the special risks of the alternative fluids.

Among the conditions necessitating saline infusions are collapse and

<sup>1</sup> British Gynecological Journal, August, 1905.

shock. Collapse is due to one or more of the following factors: cardiac, respiratory, hemorrhage, vasomotor.

The factor which concerns us most in gynecology and obstetrics is hemorrhage, though asthenia as affecting cardiac and respiratory mechanism is to be remembered. Hemorrhage sufficient to cause collapse must be excessive and is generally from large venous trunks. Surgical shock as opposed to collapse "is mainly due to the impairment or breakdown of the vasomotor mechanism, but all the factors referred to as causing collapse may add to shock. It would seem that in the fatal cases of shock, and in the conditions of most profound shock there is a condition of either total paralysis of the walls of the smaller vessels or its equivalent, allowing a fall of blood pressure below the standard necessary for effective cardiac action. That the heart is not exhausted and is not the principal factor in the production of shock is a just conclusion based on a well-known physiological experiment; for the mammalian heart has been kept beating for many hours after removal from the body; also, when allowed to 'run down' almost to the point of ceasing, it can be incited to further activity when a suitable fluid is provided for it to act on. These physiological data point to a factor common to hemorrhage and shock, namely, fall in blood pressure due, in the former, to direct depletion of blood, and in the latter to diminished peripheral and splanchnic resistance."

If it be possible to restore the blood pressure we may hope to save the patient. Transfusion of blood is the means adopted to accomplish this. The transfused fluid acts not in virtue of its physiological or food carrying property, but on account of its volume and bulk in filling out the depleted heart and vessels to a point where the circulation can be maintained satisfactorily.

Normal saline solution is the substitute for human blood which has come to stay. Pure human blood probably possesses a certain physiological value as well as a physical value, but its problematic advantages are more than neutralized by the other and still greater disadvantages, *i. e.*, the difficulty of obtaining blood in sufficient quantity or with sufficient rapidity, and the difficulties and dangers attending the transfusion of blood both to the giver and to the receiver, of which clotting is the principal.

The principal advantages of normal saline solution are:

1. It does not destroy the physical, chemical, or physiological character of the blood of the receiver.
2. It has no action on the red blood cells, to which it is isotonic. Their value is not impaired.
3. It is readily obtained and easily prepared. It necessitates no "giver." It is easily manipulated.



4. The fluid and the process of infusion is, whether intravenous or subcutaneous, free from danger to the receiver.

5. The quantity may be varied at will and repeated if necessary.

In giving the solution, Crile found that there was no direct ratio between the height from which the solution was allowed to flow and the rise in blood pressure. Varying temperatures of the fluid caused no uniform or corresponding difference in blood pressure. When the solution was cold the heart beats were diminished and the strokes longer. Hot saline produced the opposite effect. Where blood pressure had been lowered by reasonable hemorrhage alone saline infusion promptly restored it. Normal saline solution is effectual in shock in proportion to the impairment of the vasomotor mechanism.

In determining in what cases saline infusion should be used Crile has this to say: 1. If the peripheral resistance is lost (break-down of the vasomotor mechanism, that is to say fatal shock) no amount of infusion can do more than temporarily or partially restore the lost blood pressure, and death is inevitable. 2. If the shock is much increased by regional accumulation of blood (so-called intravascular hemorrhage), as in operations in the splanchnic area, infusion may be effective because the peripheral resistance is still present. The vasomotor mechanism has not gone into resolution. 3. If hemorrhage complicates shock and the vasomotor mechanism is intact infusion is effectual.

The authors submit a report of a series of nineteen cases, eighteen operative and one of postpartum hemorrhage, in which saline transfusion was resorted to as absolutely necessary, all recovered but one, an exceptionally severe ovariectomy with multiple adhesions.

The transfusion was given in two cases of postoperative septic peritonitis, one case of puerperal peritonitis, and one case of septic peritonitis following an appendicular abscess. No beneficial results were noted in these cases; all succumbed. One case of urobilinuria, which developed in the patient's first pregnancy, was transfused, but with no result beyond a temporary amelioration of symptoms immediately following the transfusion. One case of intermediate hemorrhage which occurred on the fourteenth day postpartum, and was accompanied by acute puerperal mania, recovered after four pints of saline solution were transfused subcutaneously. It will be noted that the use of the saline in the pathological state of sepsis is valueless.

The deductions drawn from these results are that the proper object of normal saline transfusion is the restoration of normal blood pressure. In so far it is successful, but when we leave this issue and attempt to utilize normal saline for pathological rather than physiological defects the results are not satisfactory. The quantity to be used is that amount necessary for the blood pressure restoration. Seven pints at one trans-

fusion was the greatest quantity used by the authors. They say they should not hesitate to transfuse whatever quantity a lack of systemic response might apparently require, until the indications of recovering vitality called a halt. The kidneys easily get rid of a surplus of the solution and this knowledge should relieve one of the haunting dread of giving too large a quantity. The best time for transfusion is undoubtedly during the conduct of the operation. It is believed that in giving it this way a smaller quantity of fluid would assure the self-same result, than if the transfusion were employed to meet the cumulative stresses of a complex operation at its close. Transfusion can also be successfully undertaken some hours or a day or two after operative procedures.

*The Comparative Values of the Intrarectal, Subcutaneous, and Intravenous Methods.* The intrarectal method ranks lowest, both as to its range of fitting cases and its power to meet critical conditions. It may be used where the systemic depression is not profound, where it is of recent origin, where the circulation is not greatly perturbed, and where a large quantity of fluid is not likely to be necessary for effectiveness.

The subcutaneous method covers by far the largest range of cases to be benefited by transfusion. It, like the intrarectal method, has its limitations. Where rapid absorption is required, as in subcutaneous transfusion, the cardiac state must previously be fairly normal. Defective heart conditions are, then, a definite contraindication to subcutaneous transfusion in critical cases. In all but those critical cases where consciousness is wanting, and the reflexes are abolished and the cardiac action very defective subcutaneous transfusion may be properly employed; the intravenous method may still be resorted to should necessity require.

Intravenous transfusion is alone available in a limited class of cases. Among these are the semimoribund cases where there is unconsciousness, reflexes are abolished and the heart's action is very defective. Intravenous transfusion is specifically requisite where the results to be valid must be immediate; where heart defects are known to exist; where the absorptive and circulatory processes are obviously almost at a standstill; and after the subcutaneous method has failed.

## THE PUERPERAL PERIOD.

**Puerperal Infection.** Bacteriological studies of the vulvar and vaginal secretions have taught us the dangers of vaginal examinations and of frequent antepartum douches, but it is a disappointment that thus far similar examinations of the vaginal and endometrial discharges and of the blood of puerperal patients afford us scant aid in the diagnosis or treatment of grave infections. Bacteriological studies of the blood are of practical value in the differential diagnosis of some rare and obscure



puerperal conditions associated with fever, such as typhoid or malaria, but they teach us little or nothing as to treatment that the experienced observer cannot learn as well or even better from clinical observation. It is to be hoped that some method of obtaining the secretions, free from the criticism of possible contamination, will finally be recognized and that bacteriologists will ultimately agree that the endometrium, in fever-free patients, never contains pathogenic micro-organisms potentially active.

**The Germ Content of the Uterus and Vagina during the Normal Puerperium.** Brownlee<sup>1</sup> gives the results of his investigations in twenty normal puerperal women. The specimens were obtained on days varying from the second to the twelfth.

The result of the examinations was that "although no single specimen gave negative results throughout, yet the thirty-seven uterine specimens showed only three, in two patients, in which a pathogenic organism, viz., the gonococcus was present, and the forty-two vaginal specimens only five in which such organisms occurred, viz., gonococcus twice, bacillus coli communis and staphylococcus pyogenes aureus once, the last being almost certainly a contamination." From this he concludes "that the lochia of normal puerperal women only exceptionally contain organisms capable of giving rise to puerperal septicæmia. That they do not contain organisms which may on occasion give rise to slight fever I am not prepared to say."

In attempting to reconcile the many contrary statements made by various investigators the writer calls attention to: 1. The difference of technique. 2. The times at which the specimens were obtained. 3. The amount of secretion used for examination, etc. His technique consisted in taking a glass tube of about 5 mm. diameter and attaching it to an aspirating syringe. An assistant held the labia well apart, thus enabling him to introduce the tube without chance of contamination from the vulva or hymen. Thus he was able to dispense with a speculum, which he believes is an instrument responsible for the positive results of so many observers.

The organisms found were these:

A. In the uterine and vaginal specimens.

1. A bacillus of somewhat variable size, which, in process of development, took on spore formation and showed a great variety of what were apparently involution forms, *e. g.*, beading, clubbing, bipolar staining, and formation of filaments of various lengths, never, however, branching. It resembled in many ways bacillus subtilis, but grew aërobically and anaërobically, and was larger and coarser. It stained by the Gram method.

<sup>1</sup> Surgery, Gynecology and Obstetrics, March, 1906.

2. A short bacillus, generally in pairs, often showing distinct metachromasis, grew in bouillon only, and appeared in one case to be in pure culture.

3. A large coccus, occurring sometimes in pairs, at other times in groups like staphylococci. It appeared in two or three cases in pure culture, and had not the appearance of any of the pyogenic organisms.

4. A small coccus, occurring singly, in pairs, or in groups, generally along with 1; it often showed metachromasis.

5. A diplococcus having the morphological characters and staining reactions of the gonococcus.

B. In the vaginal specimens only.

1. A coccus having the characters in film and culture of staphylococcus pyogenes aureus. Almost certainly a contamination. It occurred once only.

2. A bacillus staining uniformly, and both in microscopic and macroscopic appearances resembling closely bacillus coli communis, occurred in the same patient on two different occasions. She had no clinical disturbance.

3. Forms of yeast fungi appeared in two specimens.

In collecting specimens of lochia the author used practically the technique of Döderlein as well as the same culture media, but his results were very far from coinciding with those of that investigator. He, however, considered a slight colony a positive result, whereas Döderlein, like many other investigators, fixed a considerably higher limit in this respect. The important question is, Does the uterine cavity contain pyogenic cocci of any sort which could produce puerperal septicæmia? It was noted by the author that in most cases the growth on the culture media was much more profuse in the vaginal than in the uterine specimens. While there is a relatively larger number of bacteria present in the vagina, yet often it was quite evident from the direct films that there was as great bacterial density in the one as in the other, notwithstanding the results were as stated.

Brownlee's conclusions from his study of the literature and from his own observations are as follows:

1. We may look on the genital passages of the female as normally free from pyogenic cocci which can cause puerperal septicæmia.

2. The same cannot be said as regards organisms both aërobic and anaërobic, which, while not actually pyogenic, may yet be capable of causing the slightest fevers of the puerperium.

3. Gonococci may be found in the puerperal uterus, even in cases running apparently a normal course.

4. Antiseptic douching before, during, or after labor is to be considered in all ordinary cases not only unnecessary but actually dangerous, since



it has been amply proved that the normal secretions of the genital passages have distinct bactericidal powers, and if we remove those secretions by douching we lower the power of resistance of those parts, and thus increase the danger of infecting them by accidental contamination in the process of douching. From five other cases which developed febrile temperatures during the puerperium, and of which pyogenic organisms (gonococci) were discovered in but one case, the author decides that feverish symptoms postpartum are by no means always due to ordinary pyogenic bacteria. He, therefore, agrees with Marx in strongly emphasizing the necessity for considering every puerperal case with a disturbance of temperature from a general as well as from a local standpoint.

**The Employment of Blood-agar Plates in Obstetrical Work.** Fabre and Amstad<sup>1</sup> have employed a method in this investigation which was first proposed by Sitman and subsequently modified by Lenhartz. It is claimed for it that by its use the invasion of the puerperal woman by the streptococcus pyogenes can be determined early and easily, and that consequently it is of great clinical value, leading in a maternity hospital to early isolation and to a correct prognosis and treatment.

Other organisms, such as the gonococcus, the colon bacillus, the anaërobic organisms, and the pneumococcus, play a part in puerperal infections, but the streptococcus is nearly always found in the graver infections, and is the one after all we mainly have to fight. The method is available for the discovery of the organism whether it be in the blood or in the lochia. In making a culture from the blood it is necessary to puncture a vein not only because this method allows one to draw off a sufficient quantity of blood, but also because every impurity can be avoided with certainty. The method of Sitman-Lenhartz consists in the mixture of the blood with the liquid agar. At the moment the blood is withdrawn the agar ought to be liquid and at the required temperature. It should have been heated to 100° C. and cooled down slowly to between 45° and 48°. To each tube of agar is added 3 to 5 c.c. of blood, and after well mixing the two liquids they are turned into a sterilized Petri bottle. In a very short time the blood agar becomes solid and adheres intimately to the bottle. The Petri bottles are then placed in the incubator at a temperature of 37° C. It is always necessary to make this mixture of the blood with the liquid agar and to turn it into a Petri bottle, and it does not at all suffice to make the blood run down on inclined agar, because the blood serum by its own bactericidal power can, unless sufficiently diluted, prevent the growth of the germs when they are comparatively few in number. In these cultures made direct in the tube the control

<sup>1</sup> Bull. de la Soc. d'Obstet. de Paris, March 16, 1905.

of the growth of the germs and the control of the contingent impurities are rendered much more difficult.

On examining this blood agar we will find in twelve to eighteen hours small colonies varying in number according to the gravity of the infection. These colonies are grayish, and round or slightly elongated. The most characteristic feature and the one which enables us to recognize them even macroscopically as streptococci is an areola, white in color, which is formed around each colony. This areola is due to the absorption of hæmoglobin by the streptococcus. If the colonies are very numerous the areolæ are confluent. These colonies examined microscopically show small chains and diplococci, which when cultivated in broth give rise to long chains characteristic of streptococcus pyogenes.

The streptococcus gracilis does not produce the areola of absorption. It forms small colonies which are either black or slightly greenish. According to the authors the streptococcus gracilis is never the cause of puerperal fever, nor is it found in cultivations from erysipelas or phlegmon. It plays in general a role of little importance. Besides the streptococcus the pneumococcus will grow strongly on the blood agar, producing well-developed colonies strikingly green in color. The staphylococcus and gonococcus can also be cultivated. It is not often that the differential diagnosis between typhoid and puerperal fever has to be made, but Fabre and Amstad claim that a blood culture in this method indicated affords a sure and easy method of diagnosis. The colonies of the typhoid bacillus develop thirty-six hours after the withdrawal of the blood, and appear as black points in the depth with a slightly grayish color at the surface. The authors claim that this method is more certain and that the diagnosis is made much sooner than by the Widal reaction.

Apart from the blood examination the blood-agar should be used for the examination of the lochia. In mild cases of puerperal infection organisms will be found in the lochia and not in the blood, and it is in these cases that vigorous intrauterine treatment is called for. Where the culture from the blood is positive as well as that from the uterus, intrauterine treatment is no longer indicated. The authors claim for this method that it allows of the easy recognition of the streptococcus pyogenes; it allows of the separation of the gracilis group, which is important because it plays no active role in the etiology of puerperal fever; and that the technique is very simple.

**Presence and Significance of Streptococcus Pyogenes in Normal Parturients.** Schenk and Scheib<sup>1</sup> in their investigations found that about one-third of all normal parturients had pathogenic streptococci in the lochia. Tests proved them virulent for mice and rabbits. One hundred partu-

<sup>1</sup> Zeitschrift f. Geburts. und Gynäk., Stuttgart, lvi., No. 11.



rients were examined, and in one-third of the cases streptococci were found between the seventh and ninth days. As late as the fifth day the lochia were almost always sterile. They review previous papers upon this subject and discuss reasons why the streptococci do not cause trouble in these cases, but arrive at no definite conclusion.

**The Bacillus *Ærogenes Capsulatus* in Puerperal Infection.** Little<sup>1</sup> says that the "gas bacillus," which was first described by Welch and Nuttall in 1892, was isolated by Dobbin in 1897 from a case of physometra, who suggested that this organism was the true etiological factor concerned in its production. This organism has also been isolated by French and German observers. The difficulty is the varying names under which the organism is described. Little believes them to be undoubtedly identical with the bacillus of Welch and Nuttall. The best known of these bacilli are: (1) The "vibron septique" of Pasteur, generally believed to be the bacillus of malignant œdema; arguments are presented against this view and in favor of its representing an impure culture of the gas bacillus. (2) The bacillus phlegmones emphysematosæ of Fraenkel, which, although admitted by Fraenkel himself to be identical with the gas bacillus, is still the only one widely known in Germany. (3) The bacillus perfringens, admitted by its investigators to be identical with Fraenkel's bacillus. Other less well-known organisms are mentioned, *i. e.*, bacillus emphysematis vaginæ, the granulo bacillus saccharobutyricus immobilis liquefaciens, the bacillus ærogenes aërophilis agilis, and the bacillus septique aërobic of Legros and Lecene. This latter seems to be identical with what Welch calls the aërobic form of the gas bacillus, and is interesting from the fact that it was so named to accentuate its points of similarity with, and dissimilarity from, the vibron septique. The cultural characteristics and pathological properties of the bacillus ærogenes capsulatus are well known, but many are not aware of the extent of its distribution. It has been found regularly in the feces of human beings, dogs, cats, swine, rabbits, etc., and likewise in the excreta of flies found hovering about dead bodies. It is frequently found in garden earth but rarely in street dust; occasionally it may be isolated from the dust of hospital wards and from scrapings from the human skin. Its introduction into the pregnant or puerperal uterus may give rise to one or more of the following conditions: (1) Emphysema of the foetus. (2) Puerperal endometritis. (3) Physometra. (4) Emphysema of the uterine wall. (5) Gas sepsis.

Gas sepsis is probably the most important of the subdivisions. Cases showing evidence of general infection with the gas bacillus are not infrequently seen at autopsy, but it is often difficult to decide whether the

<sup>1</sup> Johns Hopkins Hospital Bulletin, April, 1905.

infection occurred during life or postmortem. In but five cases has the bacillus been isolated from the blood during life, all of which terminated fatally.

Three of these were not puerperal, one was apparently a case of chorea. The author states that "Gwynn repeatedly cultivated the bacillus from the blood in a case of chorea."

The two instances in which the bacillus was isolated from puerperal infection are recorded by Fraenkel and Lenhartz. Fraenkel's case was reported with practically no detail. Lenhartz's case died from a general infection following an abortion at the second month. There were marked pyrexia, jaundice, and air hunger with development of mild delirium. At the autopsy gas was present in the heart, and bacilli were found in sections from all the organs. No note of general emphysema was made.

Puerperal endometritis is second in importance only to gas sepsis, and must be considered as a possible forerunner of that condition. In the obstetrical department of Johns Hopkins Hospital they have had experience with the gas bacillus in fifteen cases, in ten of which the bacillus was isolated with absolute certainty. Seven of these ten cases followed operative procedures and one a self-induced abortion. One case which entered the hospital profoundly infected stated that she had not been examined vaginally. The organisms cultivated from this case were obligate anaërobes, and intestinal ulcers were found at the autopsy. Little states that though these organisms usually gain entrance to the uterus by the examining finger or by instruments they may occasionally be present in the circulating blood, by which they are carried to the uterus. Once within the uterus the character of the reaction produced will probably vary with the facilities for growth and development afforded by circumstances. It would seem that the anaërobic growth is favored by such procedures as packing the vagina. In cases where the infection is mixed it is doubtful whether free drainage would preclude the growth of anaërobes, since aërobes not only absorb a certain amount of oxygen, but also give off some substance favoring the growth of anaërobes. The recognition of the presence of the gas bacillus is important in relation to that large group of cases known as "sapræmia."

The diagnosis in such cases is usually based on the benign clinical course which has been shown to be a fallacious method by several bacteriologists. No case should be diagnosed as sapræmia without a bacteriological examination. Doleris says that all organisms found in saprophytic infections have been found in the vagina. As the bacillus aërogenes capsulatus is not an inhabitant of the vagina, and as it would appear neither advisable or justifiable to classify it with the ordinary putrefactive bacteria, the possibility of its giving rise to autoinfection or sapræmia is very remote.



The routine methods of avoidance of infection are described. Should fever arise the points to remember are: (1) removal of any retained products by the finger, not the curette; (2) free drainage; (3) stimulation of the natural resistance of the patient. In regard to this point the greatest emphasis is placed on the necessity for large quantities of fluid either taken by mouth or injected into the rectum. Hysterectomy may be justifiable, but only when the infection is on the point of becoming generalized. It is obviously difficult to establish this definite moment.

A synopsis is given of the cases in which the gas bacillus has been demonstrated; these cases are markedly different in clinical characteristics, some of them being severe cases of septicæmia ending in death, others quite mild cases of puerperal infection. An illustration is given of the last case: A case of inevitable abortion; the vagina was packed; a marked rise in temperature followed subsequent to the discharge of the ovum. The temperature rose to 103° F. There were no subjective symptoms and the temperature fell to normal within forty-eight hours. The cultures were taken from the uterine lochia; the smears showed coarse bacilli staining by Gram's method, while cultures showed *bacillus aërogenes capsulatus*.

Boldt<sup>1</sup> believes that it is not just that we do not admit the possibility of self-infection. Although in the great majority of cases we must admit that infection is carried from without, he believes that possibility of self-infection does exist.

Carefully conducted investigations have shown that in the secretions of more than 75 per cent. of puerperal women, aërobic chain cocci may be demonstrated without necessarily causing more than a small percentage of morbidity, and that only of short duration. Further, it is known that streptococci may be present in the entire genital tract in women who have not been examined internally, and yet such women may be entirely free of fever.

The anaërobic streptococcus of Kroenig and the parapneumococcus of Navtig are found in the vagina in clinically apyretic cases.

Streptococci, staphylococcus albus and aureus, bacterium coli, bacillus aërogenes capsulatus, diplococci, diplobacilli, etc., have been found in puerperal patients. According to Navtig, the multiplication and increase in virulence of the streptococci seems largely dependent upon changes in the genital secretion after the beginning of labor. Investigation has shown that genuine streptococci may live in the vagina of clinically perfectly healthy women as innocent saprophytes, and that during their ascent their character may become entirely changed, and their virulence increased through changes in the fostering soil during labor or at the beginning of the puerperium.

<sup>1</sup> New York Medical Journal, May 19, 1906.

As streptococci pyogenes have been found in the interior of the uterus in cases where no internal examination was made at any time, such proof makes it evident that we have no right to deny the possibility of self-infection. Abortion and delivery at term may be entirely free from fever, but there may be streptococci in the uterine secretions. This proves that freedom from elevation of temperature never assures freedom from micrococcic invasion of the uterine cavity. It also proves the slight value, or practically none, so far as the treatment of a septic patient is concerned, of taking cultures from the secretions.

The symptoms of illness go hand in hand in their seriousness, proportionate to the virulence of the micro-organisms, and the presence of micro-organisms spontaneously ascending into the uterus is dependent upon the presence of dead material in the uterus. Hellendall studied the manner in which micro-organisms ascend in a patient who had at no time been examined when she entered the clinic, and who had no elevation of temperature. A blood-clot which protruded from the external os was conveyed antiseptically into alcohol. Transverse sections showed an irregular arrangement of many short, thin rods, which were present only on the superficial surface and absent in the centre. These rods were identical with those found on the examination of the lochia on two subsequent occasions, at an interval of several days, and proved that the vaginal organism in this instance ascended on the surface of the blood-clot into the uterine cavity.

Another source of infection may come from the peritoneal cavity by means of the Fallopian tubes, as in cases of appendicitis during pregnancy. In this manner the liquor amnii may become infected, and secondarily, the foetus, which accounts for the stillbirths and abortions seen in such cases.

Infectious diseases may likewise cause infection of the liquor amnii *intrapartum* and lead to a similar result. Theoretically the most rational method to treat septic infections is by means of serum therapy, but unfortunately nearly all fatal cases of puerperal infection are examples of mixed infection.

The most recent prognostication of puerperal fever as determined from blood examinations have been made by Kownatzki whose conclusions are:

1. The prognosis is favorable if there is no deterioration of the neutrophile blood picture or only a slight one and eosinophile cells are present.

2. The prognosis is unfavorable with a leukocytosis of more than 50,000, serious deterioration of the neutrophile blood picture, absence of the eosinophile cells, and decided diminution of the red blood corpuscles.



3. An improvement is shown by: Betterment of the neutrophile blood picture and the appearance or increase of the eosinophile cells.

4. Retrogression is manifested by a deterioration of the neutrophile blood picture, diminution or disappearance of the eosinophile cells.

5. The prognosis is absolutely uncertain with the appearance of poikilocytosis, combined with polychromatia and nucleation of the red blood cells.

**The Varied Character of Puerperal Infection.** Puerperal infection, in spite of the increase of our knowledge of prophylaxis, is still the cause of the majority of deaths occurring in pregnancy and the puerperium, says McDonald.<sup>1</sup>

Although the pathology of the simpler and so-called "pure" forms has been thoroughly described the various manifestations of the disease itself have not been so well understood.

Puerperal infection differs from all other bacterial infections in that it occurs in organs whose anatomical relations and blood supply have been altered temporarily. This is of importance in determining the extension of the infection. Autoinfection is here considered not alone as limited to some part of the genital canal, but as being carried to the genitalia from some focus in a remote part of the body. Intercurrent bacterial disease primarily non-genital must also be considered a factor in the causation.

He cites the following cases:

Case I. Streptococcic endometritis with septicæmia; bacilla aërogenes capsulatus infection; acute yellow atrophy of the liver. The patient, a primipara aged twenty-five years, had severe vomiting of pregnancy at the fourth month and was pregnant seven months. Two days before admission the patient passed a button-hook into the uterus rupturing the membranes. The child was partially expelled on admission; the os was dilated and the child delivered. The uterus was irrigated and packed with iodoform gauze. On her entrance the vomiting was incessant, temperature 102° F., pulse 140. Slight jaundice was present. The gauze was removed the following day. The patient was restless but rational, and had severe vomiting, but no abdominal tenderness. On the third day there was slight stupor and the vomiting and jaundice increased. The patient died on the fifth day. The autopsy revealed a gangrenous and emphysematous endometritis; general infection with streptococcus pyogenes; acute yellow atrophy of the liver; pulmonary oedema and chronic pleurisy.

Case II. Primipara, eight and one-half months pregnant, who was admitted to the hospital for irrepressible vomiting. She was much

<sup>1</sup> American Medicine, vol. xi., No. 7.

emaciated and weak, with a temperature of 101° to 102° F. at night; temperature usually subnormal in the morning. The patient went to term, the fever persisting, vomiting was controlled by purgatives, diet, and saline enemas. She was delivered of a dead baby, and died the same day. The autopsy revealed large, pale kidneys, with a capsule which stripped readily. The kidney surface was dotted with numerous small abscesses, and the same were found in the kidney substance on section. Cultures from the heart blood, liver, spleen, and both kidneys showed *staphylococcus pyogenes aureus*. Pathological diagnosis: Cloudy swelling of both kidneys, pyonephrosis, dilatation of both ureters, pyoureter, cloudy swelling of liver, acute splenic tumor, and swollen mesenteric glands. Kidneys, blood, and other organs were infected with *staphylococcus pyogenes aureus*. The bladder was normal.

Case III. The patient had a normal pregnancy until the seventh month, when she had a slight attack of angina, which was relieved by treatment. She still suffered from photophobia, headache, and restlessness, with an evening temperature elevated from 1° to 2°. Premature labor occurred at seven and a half months without intervention. Immediately after the placenta had been delivered spontaneously she suddenly complained of breathlessness, became cyanotic and dyspnoëic, and died in less than two minutes. The autopsy revealed a pulmonary embolus of the left lung, cerebral thrombosis with purulent meningitis, periuterine thrombophlebitis and pyæmia. Bacteriological examinations of the uterus showed cocci in chains, not decolorizing by Gram's method and bacilli decolorizing by Gram's method. Cultures from the spleen, bile, and meninges were sterile. Cultures from uterus and left renal thrombus showed *streptococcus pyogenes* and *proteus vulgaris*.

Case IV. A primipara, aged eighteen years, who six days before entering the hospital was delivered of a seven months' child. The bowels moved after an enema on the second day; there was fever and pain at this time, which was continuous until she was admitted to the hospital. On admission her pulse was 110, temperature 104° F., but no abdominal tenderness or rigidity. Vaginal examination showed the uterus well involuted, many vulvular condylomata, and a profuse purulent vaginal discharge. The uterus was anteverted, soft, tender, and fixed. The os admitted one finger, but no placental masses were felt. Extreme tenderness was elicited on palpation in the lateral fornices. The left tube was negative, but the right was involved in a moderate-sized fixed mass. No mass or swelling could be felt in the cul-de-sac. Smears from the inside of the cervix showed gonococci and streptococci. Cultures from the uterus showed streptococci in pure culture. Blood culture on the sixth day was negative. The leukocyte count was 29,000, of which 90.5 per cent. were polymorphonuclears. The urine



showed a trace of albumin with hyaline casts. On the ninth day after a large bowel movement the patient complained of sudden and severe abdominal pain and difficulty in breathing. The pain was referred to the epigastrium and right inguinal region; it was peristaltic, intermittent, and intense; the tongue was dry and there was slight vomiting of clear, green fluid; the pulse rose to 120; abdomen became tense and rigid; the expression was anxious and patient cried out with pain.

Laparotomy was performed with the patient in the Trendelenburg position four and one-half hours after onset of acute pain. On opening the peritoneum large quantities of seropurulent fluid escaped. Severe general peritonitis was present, most intense in the pelvic region. The appendix was adherent to the right tube and ovary. The right tube was large, much thickened, inflamed, and covered with adhesions; pus exuded from the fimbriæ. The right tube and ovary were removed with the uterus, the entire peritoneal cavity was flushed with hot saline solution; iodoform gauze drain was passed through the cervical stump and the abdomen closed. The patient died four hours later. Cultures taken from the peritoneal pus at the operation and from the fibrinated end of the tube showed bacillus coli and streptococci.

The diagnosis was suppurative salpingitis and perisalpingitis; lymphangitis; septic endometritis; general suppurative peritonitis from infection with the streptococcus, the gonococcus, and the colon bacillus; septicæmia.

Case V. Patient aged twenty years, multipara, four months pregnant. Abortion was induced by a midwife by means of a catheter, and infection resulted. The patient was curetted and packed, but died three days afterward. Her temperature on admission was 102° F., and ran between that and 103° until death from peritonitis.

The autopsy revealed all the peritoneal surfaces covered with a sticky, grayish-yellow, purulent exudate. The dependent portions of the pelvis and abdomen were filled with a yellowish turbid fibrinopurulent exudate. Uterus, tubes, and ovaries were all covered with a thick layer of fibrinopurulent exudate. The right common iliac vein contained the remains of several thrombi. Cultures from the peritoneum, liver, spleen, and kidneys showed a lanceolate diplococcus staining by Gram's method. The diagnosis in this case was acute suppurative endometritis, salpingitis; acute fibrinopurulent peritonitis; puerperal infection (postabortive) with pneumococcus; pyæmia.

Case VI. Patient had a normal pregnancy, was delivered by a midwife, and entered the hospital eight days after delivery very profoundly infected. Death occurred thirty-six hours later, operative measures being contraindicated. The autopsy revealed 300 c.c. of turbid purulent

fluid in the peritoneal cavity and the intestinal coils adherent with fresh fibrinous adhesions. Both pleural and the pericardial cavities contained turbid yellow fluid. The right lung was the seat of a bronchopneumonia, and both lungs were covered with layers of fibrin and lymph. The uterus was subinvolved, soft, and discharged sticky, blood-stained material. Cultures from the liver, pleura, and uterine cavity gave staphylococcus pyogenes aureus in pure culture; cultures from the fluid of the pleura, pericardium, and peritoneum revealed many polymorphonuclear leukocytes with round cocci which did not decolorize by Gram's method. Cultures from spleen and gall-bladder were negative.

Cultures from the bronchopneumonic areas of the lung and from the peritoneum showed the colon bacillus as well as staphylococcus pyogenes aureus. The kidneys gave a pure culture of colon bacillus.

The diagnosis was acute hemorrhagic endometritis; acute suppurative peritonitis and pericarditis; septic pneumonia with pleuritis; staphylococcus pyogenes aureus infection; pyæmia.

In discussing Case I, the writer quotes statistics to show the frequency of *acute yellow atrophy* associated with pregnancy. In Legg's cases sixty-nine out of one hundred cases of acute yellow atrophy occurred in women; twenty-five were associated with pregnancy. In Thierfelder's collection of one hundred and forty-three cases eighty-eight were women, and in thirty-three instances it was associated with pregnancy. Acute yellow atrophy is also associated with many other conditions and bacterial infections. Among the bacterial infections are typhoid fever, diphtheria, erysipelas, osteomyelitis, and puerperal infection. Hyperemesis gravidarum is not infrequently associated with acute yellow atrophy. Infection is often associated with eclamptic and other toxæmias of pregnancy, and it seems that the association of infection and pregnancy is a factor of some significance in the production of acute yellow atrophy of the liver.

Concerning Case II, *pyonephrosis* is an uncommon complication of pregnancy. Hydronephrosis and dilatation of the ureters is not uncommon. Cragin believes that pyelitis complicating pregnancy depends upon two etiological factors. 1. Pressure of the ureter by the pregnant uterus. 2. Infection of the urinary tract above the point of compression. The infection is a descending one, and cystitis, when it does occur, is usually secondary to the pyelitis and ureteritis. This case, because of the exemption of the bladder and lower part of the ureter, seems to belong to this class.

The condition found in Case III, of a *periuterine thrombophlebitis*, is a most serious condition and is the most frequent predisposing cause of pulmonary embolism and sudden death in pregnancy. The importance of Mahler's sign, the rapid beat of the heart due to extra work and slight degeneration, is mentioned in relation to the diagnosis of



these cases. Richter collected 16,000 cases and found seventy-eight cases of thrombosis and twenty cases of embolism; of the latter 60 per cent. were fatal. Mahler's sign was found in 98 per cent. of these cases. The thrombosis may be due to mechanical causes but is more frequently associated with infection.

Case IV. Widely divergent views are held in regard to the incidence and influence of *gonorrhæal infection* upon tissues altered by pregnancy. The presence of a mixed infection of the gonococcus and some other organism is said to add greatly to the severity of the infection and many cases have been reported to sustain this view. However, the severity of the constitutional symptoms seems to depend more upon the extent of the anatomical lesions than upon the character of the infection.

Case V. *Pneumococcus puerperal infection* is exceedingly rare and is usually an infection from without.

Case VI. *Streptococcus infection* is the most frequent and severe type of infection after labor. *Staphylococcus pyogenes aureus* on the contrary is most infrequent, although found in two of the six cases presented here. In conclusion the writer notes that the streptococcus infection is usually the most common and severe form, but that other organisms which usually produce clinically mild symptoms may run a severe course and cause death. Autoinfection must be considered to include not only infection from foci of bacterial disease in distinct parts of the body, as autoinfection from the genital canal is probably more common than is generally supposed. A study by Bumm and Sigwart confirms this; they studied the secretions of women in the latter months of pregnancy. The streptococcus was found to be present in more than 38 per cent. of the cases, and they conclude that with very careful examination aërobic streptococci may be found in the secretions of at least 75 per cent. of all women during pregnancy and the puerperium. Of the women having streptococci, 20.4 per cent. had fever.

From this fact it may be seen that the presence of pathogenic microorganisms in the genital canal is by no means sufficient evidence upon which to base a diagnosis of puerperal infection, and even when combined with constitutional disturbances the first step only has been taken toward the proper diagnosis of the condition. The term puerperal infection should be broadened to include infection elsewhere than in the uterus, and the location and nature of such lesions should be recognized before any operative measures are undertaken. The frequency with which pain is right sided in hydronephrosis and pyelitis should be remembered in differentiating the diagnosis from appendicitis. The utter futility and even harmfulness of curetting, if attempted in such cases as those here reported, is readily seen; and when the varied character and oftentimes widespread distribution of puerperal infection are considered, the

explanation for the high mortality (over 70 per cent.) of hysterectomy in that condition is obvious.

**The Influence of the Preliminary Vaginal Douche upon the Morbidity of the Lying-in Period.** F. Ahlfeld<sup>1</sup> from his study of the statistics of lying-in patients concludes as follows: When the antepartum douche was suspended for a period in 1891-1892, there was a marked increase in the morbidity rate. The temperature of 38° C. (100.4° F.) was fixed arbitrarily as the lower limit of morbidity.

An analysis of 7000 puerperal cases showed that 662 cases in a thousand were below the limit of morbidity. Analyzing the results when the douches were suspended revealed that in 7000 cases there were 700 cases with 527 patients per 1000 who were fever-free. This was an increase of 15 per cent. over the average for the remaining 6300 cases. The reintroduction of the douche again lowered the morbidity rate.

A lowered rate of morbidity has always been noted among operative cases, *i. e.*, high forceps, induced labors, versions, etc., than in the non-operative cases, which is ascribed to the fact that at the time of operation an additional douche was given. Again, it was found in those cases of streptococcic infection of the vagina that the colonies were greatly reduced in number a couple of hours after the vaginal douche was given. Hence, for these three reasons the writer concludes that a preliminary vaginal douche should be used as a routine practice. Very few obstetricians are prepared to accept as conclusive Ahlfeld's arguments in favor of the douche, once the custom in hospital practice. The routine antepartum douche is now looked upon as unnecessary and sometimes as positively dangerous.

**The Treatment of Puerperal Infection** has not been modified to any extent during the past year. Condemnation of the curette is widespread for cases showing no debris nor putrefaction of the uterine contents.

Corroding antiseptics are no longer used within the uterine cavity. The aggressive surgical treatment of acute cases has also rather lost ground. In some quarters further experimental surgery upon the phlebotic forms of infection have been reported, with encouraging results. The extreme difficulty of accurate diagnosis which should always precede surgical treatment has not been made easier by any new clinical or bacteriological investigations.

Serum therapy has made no signal advances and the streptococcus must be better understood by the bacteriologist before treatment by serum will reach an exactness required by science. Various drugs are still employed, introduced into the circulation in varied strengths,

<sup>1</sup> Zeitschr. f. Geburts. und Gynäk., vol. lix., No. 1, p. 145.



but no striking evidence of their advantage over salt solution has been adduced. Sustaining treatment by constitutional measures continues to hold the most important place. Some question has arisen as to the real value of the enormous doses of alcohol which we have been accustomed to give puerperal septic patients. It is my conviction that we have been in error in this respect and my own experience has taught me that moderate dosage answers quite as well. The value of sugar as a sustaining food has been suggested.

Caelic and Dimitriu<sup>1</sup> report very good results from the use of *colloidal silver* in puerperal sepsis. They preferred a 1 per cent. solution, and from 0.06 to 0.10 gm. (0.9 to 1.5 gr.) for a dose, but in one severe case they injected as much as 0.15 gm. (2.25 gr.) without eliciting any disagreeable consequences. In many cases they observed after four or five hours a slight rise of temperature, which did not last long; in two instances shivering preceded the rise, but these were mild cases in robust persons, so that the authors look upon the febrile reaction as a good sign and a proof of the good vital power of the system. As there are many difficulties in making the injections into the cephalic vein, the authors used the saphenous. The vessel was exposed by an incision 2 to 3 cm. long over the internal malleolus, and the injection having been made and two ligatures applied to the vein the wound was closed with catgut. This was found to be the best way of preventing the escape of the collargol solution from the vein, the occurrence of painful infiltrations, and even local gangrene of the skin. Six cases are reported in detail with temperature charts. Suitable local measures in addition to the injections were applied.

In one case there had been repeated rigors, a thready pulse, delirium, and the temperature 40° C. (104° F.). Improvement began after two injections of collargol. In another case the fever had existed three weeks before the treatment was begun.

*Turpentine in Puerperal Infection.* Fabre<sup>2</sup> distinguishes two stages of puerperal infection: one in which the infection is local, the other in which it has become generalized. When the infection is local the treatment is confined to intrauterine lavage of an emulsion made by agitating 15 c.c. (4 ounces) of oil of turpentine and 15 c.c. (4 ounces) of alcohol with a litre (quart) of sterilized water. When the infection is general an emulsion is made by triturating 1 c.c. (15 minims) of rectified oil of turpentine and 1 c.c. (15 minims) of absolute alcohol, with 200 grams (6.25 ounces) of artificial serum; this is also injected into the circulation.

Fabre states that he has treated seventeen cases of puerperal infection

<sup>1</sup> Münch. med. Wochenschr., 1905, No. 34.

<sup>2</sup> Lyon Méd., August 6, 1905.

in this manner. In fifteen cases the streptococcus was the infecting organism, and in two, anaërobic organisms. In the latter cases the results obtained were not favorable. Of the fifteen streptococcic cases, ten were very serious clinically, but only one was fatal. The autopsy in that case revealed two collections of pus in the Fallopian tubes, with streptococci in the blood.

### THE NEWBORN INFANT.

**Brachial Birth Palsy.** Clark, Taylor, and Prout<sup>1</sup> present a thorough study of this affection. The history of the condition is given with a critical digest of the literature on the subject.

The predisposing factors in the production of this lesion are such disproportion between the child's head and the maternal pelvis as would delay the easy progress of the labor, and especially as would hinder the rotation and descent of the shoulders after descent and extrusion of the head, rigidity of the maternal soft parts, maternal exhaustion, and any other cause which will delay labor and, therefore, lower the vitality of the foetal tissues. Apparently from recorded cases transverse and face presentations have not been responsible for many of these cases. They occur with about equal frequency in vertex and breech presentations.

Brachial birth palsy occurs not only in mismanaged labors but in highly skilled hands. The etiological factors concerned as exciting causes of the lesion are:

1. Backward pressure on the nerves by the clavicle (*a*) on the transverse process of the vertebræ, and (*b*) on the first rib.
2. Hyperextension of the arms in breech cases.
3. Pressure of forceps.
4. Tension on the nerve roots.

While so many different causative factors are cited, the results are invariably the same in type, though different in degree. To determine the essential factor dissections were made upon infants. Backward pressure by the clavicle, hyperextension and pressure by forceps were found not to be factors, the only factor in these dissections which caused damage to the nerve roots was tension, and tension sufficiently great, caused lesions in the same situation and of like nature to those found in cases operated upon. Therefore, tension is the only factor concerned in the production of persistent (laceration) brachial birth palsy of the Erb type. When tension is present certain other factors may increase the amount of damage done to the nerves.

It was found that only one thing caused stretching of the nerves, namely, increase in the distance from the head and neck to the shoulder.

<sup>1</sup> American Journal of the Medical Sciences, October, 1905.



In living infants it was found that pushing the head and shoulders apart caused the upper nerves of the plexus to stand out under the finger like fiddle-strings, while in any other position they were either relaxed or not palpable at all.

In vertex presentations this attitude occurs when the shoulder is obstructed either at the brim of the pelvis or by the symphysis pubis, and the head is pulled upon by the accoucheur with instruments or hands. If rotation or oscillation of the neck be added the strain is increased and more damage is apt to occur. In breech presentations the lesion occurs in the delivery of the after-coming head. The fingers hooked over the back of the neck pull both shoulders down and away from the head and neck. Here again rotation and oscillation increases the strain on the nerve roots.

Moreover, the tips of the fingers, hooked over the shoulders, lie upon the stretched nerves and add a lateral strain to the tension they already suffer from. Invariably the fifth root gave way first, then the sixth and so on down the plexus in regular order if the force used was sufficient. The location of the lesion will be more readily understood if it is remembered that the fifth and sixth roots fuse about 1.5 to 2 cm. from their spinal exits (in infants). From the distal end of their junction pass two nerves to form part of the outer and posterior cords of the plexus respectively. For convenience sake these will still be called the fifth and sixth nerves, and in locating the lesions the terms "above," "at," and "below the junction" will be used. In twenty experiments the lesion was produced as follows:

	<i>Fifth nerve.</i>		<i>Sixth nerve.</i>	
		Per cent.		Per cent.
Above the junction . . . . .	16	80	17	85
At the junction . . . . .	2	10	2	10
Below the junction . . . . .	2	10	1	5

In the case of the sixth nerve, seven (35 per cent.) of the ruptures consisted in avulsion of its root, including the root ganglion from the spinal cord. Great force must be used to cause the lesion, which accounts for the relative infrequency of its occurrence. Of the seven operative cases one involved rupture of the entire plexus. Of the remaining six, five (83 per cent.) showed the maximum damage above the junction, and one (17 per cent.) below it, about the same percentage as in the experimental cases. In all the cases the cicatricial sequelæ of the injury involved the "junction." In one case the fifth root was torn across above the junction, the ends separated about 1 cm., and bound down by connective tissue. In one case the fifth root was torn across just below the junction and the distal end displaced inward and downward about 2.5 cm. to the front of the scalenus anticus, where it was adherent. There was no case of avulsion of the sixth root. It will be observed

that the maximum damage is to the fifth root. The suprascapular nerve is always involved. It arises from the distal and outer aspect of the junction of the fifth and sixth roots and supplies the external rotator muscles of the shoulder.

The gross appearances of the lesion vary much with the duration and severity of the case. In all of the operative cases detailed, the deep cervical fascia was invariably found greatly thickened, especially over the plexus, and irregularly adherent to the nerve roots. In mild cases the outward appearance of the nerve strand at the point of the lesion may be normal, or there may be a distinct nodular mass. In a case which had existed for eleven months and was relatively recent, there was a severance of the fifth cervical root just before it joined the sixth root. The severed ends were more or less rounded and embedded in a hæmatomatous mass. The recognition of the rupture of the perineural sheath and the resulting hemorrhage into its substance and the substance of the nerve bundle are points of great importance, since they are determining factors in the production of the ultimate lesion. The sequence of events in the production of the laceration brachial birth palsies may be summarized as follows: The lesions produced are immediate and remote. The immediate lesion consists in the tearing of the perineural sheath surrounding and supporting the nerve trunk and the incidental rupture of the bloodvessels belonging to it. Hemorrhage occurs into and beneath the perineural sheath, and in many instances into the substance of the epineurium. There is a more or less complete severance of the nerve strands depending on the severity of the case. The remote lesion is brought about and its extent determined by (a) the healing of the rent in the perineural sheath; (b) the size of the blood-clot and its ultimate organization; (c) the ultimate contraction of the cicatrix upon the nerve strand, which not only prevents its regeneration, but determines a neuritis in certain of those, not severed, upon which it may impinge.

The "laceration palsy" described here is so characteristic in type that in severe cases its clinical recognition, from the attitude alone, is easy; the arm hangs powerless by the side, and cannot be abducted at the shoulder because of the palsy of the deltoid and supraspinatus muscles; the forearm is extended and cannot be flexed on account of paralysis of the biceps, brachialis anticus, and supinator longus; the hand is in extreme pronation, caused by palsy of the supinator brevis and biceps, and the entire arm is so rotated inward that the palm of the hand may look backward and outward. The humerus is markedly rotated inward as a result of the paralysis of the supraspinatus and infraspinatus and teres minor muscles.

The diagnosis is based on the history of traction used at delivery,



followed immediately by paralysis of the upper extremity, with the assumption of the attitude and characteristics just mentioned above. The prognosis depends upon the (a) nature and degree of the nerve injury, and (b) the treatment.

(a) In the mild cases where the compression alone occurs, or only slight laceration (rare), spontaneous and fairly prompt recovery may be expected in three to nine months. Even in these cases there may be a persistent atrophy and retarded development through life of a part or whole of the extremity. In the more decided lacerations there may result any condition from nearly complete recovery to the total loss of function of a part or whole of the extremity. Only time (six to twelve months) will permit a fairly accurate diagnosis to be made. In those cases presenting definite "traumatic neuritis" of the nerve roots the prognosis is relatively bad from the outset, and it may be positively stated that there will be some degree of permanent damage to the extremity, although here again only time can determine its exact extent. The prognosis is influenced by the distribution as well as the degree of the lesion.

(b) Proper treatment greatly influences the prognosis even in those cases which will suffer from permanent nerve damage, for there is always some recovery in the nerves which have been only moderately damaged about the periphery of the maximum laceration. Only 26 per cent. of all forms of brachial birth palsies recover (Bruns). The statement that cases which occur in head presentations have much the better chance of recovery is borne out by statistics, yet one can understand that as less stretching force is apt to be applied in vertex labor, these cases would naturally show less serious lesions. The treatment is prophylactic, palliative, and radical.

Prophylactic treatment is necessary and it can easily be deduced from a study of the etiology. Palliative treatment should be directed to maintaining the nutrition of the muscles, to preventing contractures and resulting deformities, and to assisting the spontaneous repair of the damaged nerves by means of massage, passive motion, hot and cold douches, electricity, and such apparatus as may be necessary to overcome any deformity.

In the cases showing marked evidences of traumatic neuritis, complete immobilization is demanded until the inflammatory reaction has subsided (often two to four months). The extremity must be held in normal position in these cases until the neuritis has subsided, when active measures may be employed. Electricity not only helps keep the muscles in good condition, but also aids materially in the nerve regeneration by stimulating "neurofibrillation" in the regenerated homogeneous axis cylinders (Bethe).

Radical treatment: if the palliative treatment be systematically employed there would seem to be no disadvantage in waiting a year before proceeding to radical measures, although in certain selected cases a shorter time limit might be chosen. The advantages of waiting lie in the increased size of the operating field, the more definite localization of the lesion, and the lessened danger to life from shock and hemorrhage.

The operative technique and after-treatment of the cases is then taken up and a report of seven cases operated upon given. Two of the seven cases died, a mortality of about 30 per cent. One case, a healthy blonde girl, aged two years, left the table in good condition but died in twenty-four hours, partly from shock and symptoms which identified the case with victims of "lymphatic diathesis," "acetonæmia," and similar little understood conditions. The second fatal case was a poorly nourished child who had been in the hospital for several weeks suffering from diarrhœa. The month preceding the diarrhœa had ceased and the weight increased steadily. Death here was due to the diarrhœa, which recurred in aggravated form after the operation, and to suppression of urine.

The writers conclude that:

1. The cause of the laceration type of birth palsy is tension on the nerve trunks, which first rupture the nerve sheath and then the nerve fibres. The prevention of this serious lesion of the cervical nerve trunks rests with the obstetrician, who should not overstretch the child's neck in delivery.

2. The persistence of the palsy is clearly explained by the pathological findings, viz.: (a) rupture of the perineural sheath with hemorrhage into its substance, resulting in the formation of hematoma or hematomatous infiltration into the neighboring tissues; (b) the cicatricial contraction following organization of the blood-clot and repair of the rent in the perineural sheath. The connective tissue that formed indents and presses upon the nerve bundles, strangulating them and preventing regeneration of the nerve fibres. In some instances the same result is accomplished by the turning inward of the perineural sheath upon the nerve bundles.

3. The nature of the lesion in all cases demands excision of the damaged areas and suture of the divided ends as soon as it is proved that spontaneous repair will not take place. The plan of treatment is then the same as that for peripheral nerve injuries elsewhere.

4. In all such cases treatment which will prevent contractures and deformities and maintain muscle tone in the paralyzed limb should be systematically used until either spontaneous recovery occurs or operation is done. (Traumatic neuritis is a contraindication to active treatment.) It is obvious that the above measures should be continued after operation.



5. The proper time for surgical interference is not yet definitely fixed. It appears, however, to be much later than two or three months after birth. At the present time one year would seem to be a reasonable delay before operation.

6. Sufficient time has not elapsed in the majority of the cases reported in this series for final results to have appeared. At the end of eighteen months in two cases the improvement in nutrition, range of motion, and muscle power in the paralyzed limb have been sufficient to demonstrate the value of the operative procedure.

**Fracture of the Clavicle in Head Presentations.** Hauch<sup>1</sup> discusses this subject, and refers to Muus, of Copenhagen, as the first person who had investigated it. Muus believed that the fracture occurred while the shoulders were passing through the pelvis, and not because of the manipulations used to deliver the shoulders over the perineum. His statistics showed that this fracture occurred in 1.3 per cent. of cases in a series of 1600. Of the twenty-two mothers whose children sustained this injury, nine were primiparæ, thirteen multiparæ. The anterior clavicle was fractured five times as frequently as the posterior clavicle. At this period it was the practice to seize the child's neck and make traction alternately, first anteriorly, then posteriorly, in the meantime protecting the perineum with the other hand.

It was thought that this method favored the production of a fracture and it was abandoned. The delivery was then assisted by making moderate pressure on the fundus of the uterus, the perineum being protected as before. Hauch's statistics indicate the results obtained. In 2531 cases the injury occurred in only 0.67 per cent. of cases. Eight mothers were primiparæ, eight were multiparæ, the anterior clavicle fractured in thirteen cases and the posterior in two cases. This shows that the fractures were largely due to the technique in delivering the shoulders. The manner of protecting the perineum was not changed and it may be a factor in causing the fracture as it crowds the anterior shoulder up against the symphysis.

The fracture happens more frequently in multipara and this cannot be accounted for unless it be due to the fact that labor, in the latter stage, takes place more rapidly than in primiparæ. If the fracture occurred within the pelvis, as Muus believed, it ought to be more frequent in primiparæ and in contracted pelvis. In 145 cases of contracted pelvis the injury occurred in only 1.4 per cent. of cases.

The fracture occurs most frequently between the anterior and middle thirds of the clavicle or near the acromion. The mechanism of the injury is as follows. During labor, if the anterior shoulder is driven up against

<sup>1</sup> Zentralb. f. Gynäkol., 1905, No. 33.

the symphysis, the uterine contractions acting from behind, cause a transverse strain to come upon the clavicle, leading to the production of the fracture.

Hauch made a series of experiments to determine the amount of force required to fracture the clavicle and found in four cases it was fractured by a force of only 5 to 8 kilograms (11 to 17.6 pounds); in two other cases 15 to 16 kilograms (33 to 35.2 pounds) were necessary. The injury occurred only when the shoulders were bent forward on the chest, and then rather easily. The perineal muscles may exert this small amount of force and the pressure of the hand supporting the perineum certainly can. In each case the fracture occurred mesial to the coracoclavicular ligament, the angle of the fracture pointing upward.

Most of the fractures were subperiosteal, making the diagnosis difficult. Of his sixteen cases, thirteen had healed in ten days with callus formation, one was not quite solid, one had movable fragments, and one had healed with an upward deformity.

Hauch concludes that the fractures are due to traction on the head in delivery of the shoulders, and in the passage of the shoulders under the symphysis, when the pressure of the hand in protecting the perineum plays an important part in the production of the injury.

**Obstetric Injuries of the Cornea.** Thomson and Buchanan<sup>1</sup> present notes of nine cases of corneal injury during delivery. These authors have, conjointly, reported fifteen cases of this affection since 1902. The condition previous to that time had been regarded as a congenital one, and had been overlooked by obstetricians until attention was drawn to it in the Glasgow Maternity Hospital.

In most of the cases described the labors were very difficult ones, on account of contraction of the pelvis; in one, labor was normal, with a normal sized pelvis. This was a face presentation with prolapse of one arm, which demonstrates that the lesion may arise independently of artificial delivery. The authors state that the condition described clinically by Thomson, in 1902, under the name of "Traumatic Keratitis of the Newborn" is of twofold origin, and has a twofold prognosis. Pathological examination and continued clinical experience have confirmed this. Corneal traumatism is a rare complication of assisted labor, even when only really difficult deliveries are considered. It results from pressure, during a prolonged second stage, which is due either to some form of obstruction in the maternal passages, to compression by forceps, or to both factors combined.

In the 1903 paper the authors described three varieties of corneal changes: (a) a diffuse opacity which is temporary, (b) a diffuse opacity,

<sup>1</sup> The Ophthalmoscope, June, 1905.



intermediate in position, which is permanent, and (c) an opacity which takes a linear form and is permanent.

In the present paper only two forms, (a) and (c), are described, as the (b) form has proved to be temporary. Their present classification is: (a) a diffuse opacity, which is temporary; (b) a permanent opacity, which takes a linear form and passes vertically, obliquely, or horizontally, across the whole of the cornea, in a straight or curved manner, or concentrically with the limbus. In most cases there is more than one linear opacity. The first form is due to œdema, and may occur alone, or in conjunction with the second. The second is due to rupture of the posterior lamina of the cornea and the subsequent formation of fibrous tissue. The general opacity from œdema usually masks the linear opacities for some days or even weeks after birth. The authors are unable to determine the precise mechanism by which corneal rupture is brought about. Pressure is undoubtedly the cause, but the exact line of the pressure has not yet been determined. There was great uniformity in the clinical course of their cases. In nearly every instance the progress of the corneal change was almost identical, viz.: 1. General haze with indication of stripping. 2. Increase of the general opacity, sometimes to an absolutely impenetrable degree, and often obscuring the stripping. 3. Gradual diminution of the former, which is due to œdema, and increased visibility of the latter, which is due to scar tissue. To ophthalmic surgeons this report is of special importance, with regard to the permanent effect the lesion may have upon vision.

**Congenital Hernia of the Umbilical Cord.** Meredith<sup>1</sup> reviews the literature of this subject and presents a report of two cases. This condition is rare; according to Lindfors and Buschan it occurs once in five thousand births. Thudichum gives it as one in two thousand. Males are more frequently affected than females. In 106 cases collected by Lindfors and Buschan, seventy-five were males. These herniæ vary greatly in their contents, the simpler forms contain only a loop or two of intestine, while in the extreme cases the entire gastrointestinal tract, together with the liver and spleen, may protrude through the abdominal parietes. Other associated malformations are not unusual. Herzfeld has collected sixteen cases, twelve of which presented the following defects: In four there was a fissure of the palate, in five a fissure of the bladder, in three a pubic fissure, in four a spina bifida, and in one a cerebral hernia.

The diagnosis is comparatively easy except in the case of a very small hernia, and can usually be made by inspection alone, as the sac remains translucent for some hours after birth. An operation for the radical cure is conceded to be the only chance the child has for life, or at least

<sup>1</sup> New York Medical Journal, January 20, 1906.

of a permanent cure, and is indicated in every instance where prematurity or extensive malformations do not interfere with the child's viability.

Case I. A male child, aged eight hours, had no bowel movement since birth. A large pear-shaped tumor, 7 x 8 x 8 cm., was seen at the umbilicus. The tissue on the surface of the tumor was quite translucent and was joined to a cuff of epidermis, which surrounded the constricted base of the hernial mass, and extended for a distance of 1 cm. above the abdominal wall. Beneath the covering one could plainly see several coils of intestine. There was no peristalsis, nor any impulse when the child cried. Under chloroform an incision was made beginning 4 cm. above the umbilicus and extending down through the hernial ring and lower third of the sac. About 30 c.c. of slightly stained fluid escaped from the sac. The sac contents consisted of a large portion of the small intestine, and the cæcum with its appendix. The hernia was reduced and the incision closed with through-and-through silkworm-gut sutures. On account of extreme youth no attempt was made to suture the recti muscles. An enema of 90 c.c. of normal salt solution was given before the patient left the table. The child had an uninterrupted recovery and two years later had never exhibited any evidence of a recurrence.

Case II. A premature female child, aged eight months, was four pounds in weight. The tumor was 10 x 12 x 12 cm., and lay on the abdominal wall near the umbilicus. The tissue covering it was translucent, and somewhat myxomatous in appearance. The contents of the hernial sac, which consisted of the liver and apparently the entire gastrointestinal sac, although not strangulated, could not be reduced, due to insufficient space in the abdominal cavity. The prematurity and extreme type of the malformation were considered as contraindicating operation. The infant died the following day; autopsy was not permitted.

Simple laparotomy with incision of the sac and uniting and freshened edges with through-and-through sutures has proved the most satisfactory operation.





# DISEASES OF THE NERVOUS SYSTEM.

BY WILLIAM G. SPILLER, M.D.

## DISEASES OF THE BRAIN.

**Brain Tumor.** CONCLUSIONS DRAWN FROM NECROPSIES. Walton and Paul<sup>1</sup> have studied the necropsy records of 424 cases of brain tumor, and draw important conclusions. Their comparison of a glioma with the decay of a fruit is striking and exact. Those who have attempted to remove a glioma know how hopeless such an undertaking is. Out of 424 cases 30, or 7 per cent., were operable; 338, or 80 per cent., were inoperable, and 56, or 13 per cent., were placed in the doubtful class. The combination of operable and possibly operable, therefore, reached 20 per cent.

Eliminating, on the other hand, the cases in which metastasis or infection was elsewhere present and the cases in which it was stated that no diagnostic symptoms were present, the number of operable cases was reduced to 14, or 3.3 per cent., the doubtful to 34, or 8 per cent. This analysis showed that the highest proportion of operable cases noted in previous statistics (17 per cent.) may be approximated in their cases by including the doubtful or possibly operable among the operable; and that, on the other hand, the lowest estimate (3 per cent.) may be approximated by including only the undoubtedly operable and excluding those without distinctive symptoms and those with infection elsewhere.

I have for years been teaching the students that *gumma* is not the most common lesion of cerebral syphilis, and that it is not to be placed among the most common tumors. I have comparatively few gummata in my large collection of brain tumors. I have felt that I was in opposition to the teaching of many. It is, therefore, gratifying to read that the diagnosis of gumma was infrequent in the reports of Walton and Paul. The diagnosis does not appear at all in the series of Blackburn, nor does it appear in the Massachusetts General Hospital records since 1896. Walton and Paul remark that these observations are in marked contrast to the frequency with which the clinical diagnosis is made, particularly in cases of multiple symptoms. The recklessness with which the clinical diagnosis of gumma is made by many, in cases with cerebral symptoms where syphilis is suspected, is surprising. The examination of

<sup>1</sup> Journal of Nervous and Mental Disease, August, 1905, p. 481.



the brains from many such cases has taught me that the lesions are usually arteritis and meningitis.

Walton and Paul study many of the symptoms occurring in their cases, especially the condition of the *reflexes*. In central convolution tumors the knee-jerk was increased in seven cases, decreased in none; parietal increased in three, diminished in none; centrum ovale, increased in three, diminished in one; corpus callosum, increased in nine, diminished in three.

Among tumors of the basal ganglia, corpora quadrigemina, pons and medulla oblongata the knee-jerk was increased in five and diminished in three (in one case of thalamus tumor the knee-jerk was increased only in the early stages).

Among cerebellar tumors the knee-jerk was increased in four, diminished in five cases.

Of tumors in other locations: frontal, in eight the knee-jerk was increased, in nine decreased; temporosphenoidal, in three increased, in three decreased; pituitary body, in four increased, in five decreased; occipital, in four increased, in two decreased.

In a case of brain tumor observed by Fürstner the growth was supposed to be in the frontal lobe because of pronounced mental disturbances and tendency to joke, but the necropsy showed multiple growths in the cerebellum.

Fürstner<sup>1</sup> discusses palliative operations for the relief of the symptoms of brain tumor in those cases where the tumor cannot be removed, and refers to Sänger, v. Bergmann, Oppenheim, Bruns and others in this connection. He favors the palliative operation. He considers also *hernia of the brain*. The cases he reports were not very successful as regards surgical interference, it is, therefore, not surprising that he shares v. Bergmann's views, and believes that only those tumors are removable which are in the motor cortex, are not too large, and are well-defined. In the majority of the other cases the localization is too uncertain and palliative operation is preferable.

**TUMOR OF MOTOR AREA.** R. Alessandri's<sup>2</sup> case of solitary tubercle of the Rolandic area was one without the general symptoms of brain tumor. The patient had Jacksonian epilepsy of the right side and paresis of the right upper limb and right side of the face; because of these signs operation was performed, with the removal of a tumor and much improvement in the patient's condition. I have seen just such a case as this, one sent to the University Hospital by Dr. McConnell, and reported by him. When symptoms such as those in Alessandri's case or McConnell's are present it is proper to operate, even though

<sup>1</sup> Archiv f. Psychiatrie, vol. xli., No. 1, p. 202.

<sup>2</sup> Monatsschrift f. Psychiatrie und Neurologie, July, 1905, p. 62

choked discs, headache, nausea, and vomiting are absent, and it is in just such cases that we may expect to accomplish the most.

**TUMOR OF THE LATERAL VENTRICLE.** Tumors of the lateral ventricle of the brain are rare, but Hans Hunziker<sup>1</sup> has collected the records of a number of cases and reports a case of his own in which the tumor was entirely in a lateral ventricle. He is in doubt whether to call it a glioma or a sarcoma.

**SYMPTOMS OF BRAIN TUMOR WITHOUT LESIONS.** The symptoms of cerebral tumor without postmortem findings may exist in a child as well as in an adult. Henneberg<sup>2</sup> reports the case of a girl, ten years of age, who had vomited often during the summer of 1900, and in September of that year began to have right-sided Jacksonian convulsions. Motor aphasia and right hemiparesis began at the same time as the convulsions and were at first transitory. The girl also had attacks in which there were deviation of the head and eyes to the right, right facial spasm, and intense pain in the right side of the body, without complete loss of consciousness. The eye-grounds and the urine were normal. An operation was performed after the attacks became so numerous as 130 in a day, but nothing abnormal was found. The child died from purulent meningitis August 1, 1901. The necropsy showed no lesions that had been present before the operation.

Oppenheim, in 1901, called attention to the existence in children of the symptoms of brain tumor without lesions. Nonne has described the same condition in adults. There seems to be no positive way of making a correct diagnosis, and, therefore, in a doubtful case I should be inclined to advise operation, provided I believed the symptoms indicated the existence of a tumor in or near the motor area.

**EFFECT OF BRAIN TUMOR ON MENSTRUATION.** There can be no doubt that cessation of the menses may be an early sign of tumor of the brain. Attention has been called to this subject by Axenfeld, Bayerthal, Abelsdorf, and more recently Müller.<sup>3</sup> The latter reports five cases which he has observed within a year and a half. One of these was especially interesting, because the menses ceased in a young and apparently healthy woman soon after her marriage, and pregnancy was supposed to be present. Müller thinks that amenorrhœa is more likely to occur when the tumor is in or near the pituitary body, or when it is in some other part of the brain and causes early developing hydrocephalus and rapidly developing blindness. Exactly in what way the menses are affected by tumor of the brain is unknown. It is presumable that many have observed cases similar to those described by Müller;

<sup>1</sup> *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xxx., Nos. 1 and 2, p. 77.

<sup>2</sup> *Berliner klin. Wochenschrift*, July 24, 1905, p. 964.

<sup>3</sup> *Neurologisches Centralblatt*, September 1, 1905, p. 790.



certainly such have occurred in my experience, and it is important to remember that amenorrhœa may be an early sign of tumor.

PARALYSIS OF ASSOCIATED EYE MOVEMENTS AS A SIGN OF BRAIN TUMOR. I<sup>1</sup> have studied thirty-eight cases of paralysis of upward or downward associated movements of the eyes (inability to move either eye in one of these directions) reported in the literature, not including nine of my own. In many cases certain symptoms are not referred to, so that statements regarding the frequency of symptoms are incomplete. Von Kornilow used only twenty cases of the twenty-seven to which he found references in drawing his conclusions. As a result of my study of these forty-seven cases:

Paralysis of upward associated movement without paralysis or paresis of downward associated movement was found in twenty-six cases.

Paralysis of upward associated movement with paralysis or paresis of downward associated movement was found in sixteen cases.

Paralysis of upward associated movement with impairment of lateral movement, often developing later, was found in fifteen cases.

Paralysis of upward associated movement without impairment of lateral movement was found in twenty-two cases.

Paralysis of downward associated movement without paralysis of upward associated movement was found in five cases.

The reaction of the iris was found to be impaired in fourteen cases, and is said to have been normal in four cases, but in many cases no statements regarding the iritic reflex are made, and in all my nine cases the iritic reflex was preserved.

The optic nerve was found to be affected in fifteen cases and normal in twelve cases.

Convergence was impaired in fifteen cases; ptosis was found in seven cases.

Necropsy was obtained in nineteen cases. In all of these except one (Thomsen) parts about the aqueduct of Sylvius were implicated, and in Thomsen's case a gumma was found in the cerebral peduncles. Thomsen cannot explain why the intense degeneration of the right oculomotor nerve and the slight degeneration of the left oculomotor nerve caused paralysis of only upward movement. It is possible that the Nissl method, if it had been employed, would have shown marked alteration of the oculomotor nuclei, possibly as a toxic effect from the adjacent gumma, and in this way the paralysis of upward associated movement may have been caused. Until at least another case similar to Thomsen's is reported we may well hesitate to believe that a peripheral lesion of one oculomotor nerve may cause paralysis of only upward associated movements.

<sup>1</sup> Journal of Nervous and Mental Disease, July, 1905, p. 417.

Tumor was found in fourteen cases, a bullet wound in one case, apoplectic cyst in one case, hemorrhage in one case, and lesion uncertain in one case.

Recovery or partial recovery occurred in seven cases. Important symptoms other than ocular palsies were found in forty-one cases.

As a result of my studies, I believe that persisting paralysis of associated lateral movement of the eyeballs indicates a lesion of the posterior longitudinal bundle; that persistent paralysis of associated upward or downward movement indicates a lesion in the vicinity of the oculomotor nucleus, and that paralysis of associated ocular movements is not the result of a lesion of extracerebral nerve fibres. Lesions of the cerebral cortex may certainly cause paralysis of lateral associated ocular movements, and possibly of upward or downward associated ocular movements, but cortical paralysis of associated ocular movements is transitory, unless possibly where the centre on each side of the brain is destroyed. Paralysis of associated ocular movements may be caused by hysteria. Any case in which associated ocular palsy is persistent and is of organic nature is unsuitable for operation unless the operation is merely palliative, as the lesion is probably within the posterior part of the pons or cerebral peduncle, according to the form of the associated palsy, or else causes much pressure upon the dorsal portions of these structures. The paralysis of associated ocular movements may be produced by inflammatory lesions or lesions of a similar character (alcohol, syphilis) as well as by tumor, and may disappear later in the course of the disease. Syphilitic ependymitis and cellular infiltration must always be considered in diagnosing the lesion causing paralysis of associated ocular movements.

**BRAIN TUMOR VERSUS INTERNAL HYDROCEPHALUS.** Every neurologist knows that the diagnosis between chronic internal hydrocephalus and tumor of the brain may be extremely difficult, and indeed in some cases brain tumor by pressure has caused hydrocephalus, so that the two conditions may be associated. In a case studied by Paul Gross<sup>1</sup> symptoms of increased intracranial pressure developed after influenza. These were headache, vomiting, slowing of the pulse, choked discs, exophthalmos, variation in the pulse-rate, and increase in the symptoms of pressure by change of position, transitory right abducent palsy, trochlear palsy, right-sided ptosis, slight nystagmus, fine tremor in the upper and lower limbs, and ataxia. All these symptoms could have been caused by hydrocephalus, especially as there were no distinctly localizing signs. A tumor was found in the median and basal parts of the left temporal lobe, gyrus fusiformis and gyrus hippocampi and part

<sup>1</sup> Deutsche Zeitschrift f. Nervenheilkunde, vol. xxix., Nos. 5 and 6, p. 456.



of the gyrus lingualis. As it was in a silent region of the brain it could not be diagnosed.

The danger of performing lumbar puncture when brain tumor is present was shown by this case. About 15 c.c. of cerebrospinal fluid were obtained, and the symptoms became rapidly more severe, and death soon followed. Numerous large and small hemorrhages were found in the tumor and were attributed to the lumbar puncture.

Cramer<sup>1</sup> observed a case in which nausea, vomiting, headache, unconsciousness, choked discs and slowing of the pulse occurred, and the necropsy revealed a dilatation of the descending horn of the right lateral ventricle caused by tuberculous occlusion. The symptoms varied in intensity as they do in cases of brain tumor, and this variation possibly was due to partial occlusion at first, so that fluid escaped from time to time; finally the occlusion became complete. The headache was more intense on the right side, the right parietal bone was tender to percussion, the left upper limb and left side of the face were paretic, and those signs seemed to indicate a lesion of the right side of the brain; but spastic right hemiparesis with ankle clonus and occasionally Babinski's sign on the right side, right-sided ataxia, seemed to point to a left-sided lesion. The ataxia of the right side might have been caused by a right-sided lesion, as Bruns and Mann have shown that unilateral ataxia may be on the same side as the lesion, if the latter is in the cerebellum.

In another case observed by Cramer the anterior horn of the left lateral ventricle was much distended, while the rest of the ventricle was normal, and no cause could be found for the distention. The symptoms were those of infantile hemiplegia.

This distention of a part of a lateral ventricle is a very rare condition. I have observed it once in the posterior horn in an unreported case. It is important to remember that it may give the symptoms of cerebral tumor.

Finkelnburg<sup>2</sup> tries to make the clinical distinction between cerebellar tumor and chronic hydrocephalus. He thinks that cerebellar gait may be an early sign of chronic hydrocephalus and of tumor of the central ganglia; that a normal condition or a diminution of the tendon reflexes may also occur with hydrocephalus; that Schmidt's sign, viz., increase of symptoms if the patient lies on one side, according to the position of the tumor, is not characteristic of cerebellar tumor and may occur with cerebral tumor; that localized tenderness to pressure of the scalp may occur with hydrocephalus; and that more intense optic neuritis on one side is not necessarily indicative of a tumor on that side. Schmidt's sign I have found so unreliable, as regards the side of the cerebellum

<sup>1</sup> Monatschrift f. Psychiatrie und Neurologie, June, 1905, p. 561.

<sup>2</sup> Deutsche Zeitschrift f. Nervenheilkunde, vol. xxix., Nos. 1 and 2, p. 135.

in which the tumor is situated, that I attribute little value to it. Finkelnburg's paper and his cases show us what we unfortunately already knew, that the clinical diagnosis between chronic hydrocephalus and cerebellar tumor or cerebral tumor may be one of the greatest difficulty. In one of his cases a tumor of the corpus striatum gave the symptoms of tumor of the cerebellum. The course of the disease had been rapid, and choked disc and cerebellar gait had developed early, and, therefore, the diagnosis of cerebellar tumor was made.

**TUMOR OF THE GASSERIAN GANGLION.** The case of tumor of the Gasserian ganglion reported by Verger and Grenier<sup>1</sup> resembles closely that reported by Dercum, Keen and myself in 1900. Verger and Grenier believe that tumor of the Gasserian ganglion may be diagnosed by the continuity of the pain with paroxysms, although in our case paroxysms were not pronounced; by the involvement of the three branches of the trifacial nerve in the pain, by diminution of sensation in the painful side of the face, and by the involvement of the motor branch of the fifth nerve, causing paralysis of the muscles of mastication. These are reliable signs, and it was because of their existence that the diagnosis of tumor of the Gasserian ganglion was made in our case. Cases of tumor of the Gasserian ganglion fortunately are very rare.

**CEREBELLAR PARALYSIS.** It is difficult to understand how a cerebellar lesion can cause symptoms we are accustomed to associate with a cerebral lesion. Henri Lamy,<sup>2</sup> in a case in which a careful examination showed that the only lesion was softening confined to the cortex of the left cerebellar hemisphere, observed profound coma, convulsions of the left upper limb and face, paralysis of all four limbs, contractures of the left limbs, flaccidity of the right limbs, deviation of the eyes to the right, loss of all tendon reflexes, and Babinski's sign. No wonder Lamy at first thought he had to deal with a cerebral lesion, and it is difficult to see how a cerebellar softening could have been diagnosed.

**TUMOR OF CEREBELLOPONTILE ANGLE.** The attempt to remove a tumor from the cerebellopontile angle is almost invariably unsuccessful, therefore, the case of Borchardt<sup>3</sup> is worthy of mention. The tumor, a fibrosarcoma, was removed from this position by operation, but the patient died twenty-six hours later. Death was attributed to pressure upon the medulla oblongata and to hemorrhage.

**Headache.** The causes of headache are numerous, but among the most important are brain tumor and eye-strain. Walton<sup>4</sup> has examined persons blind since infancy in order to determine the frequency of headache in blindness. Sixty-six per cent. of these were free from tendency

<sup>1</sup> *Revue Neurologique*, July 30, 1905.

<sup>2</sup> *Ibid.*, p. 756.

<sup>3</sup> *Berliner klin. Wochenschrift*, August 14, 1905, p. 1033.

<sup>4</sup> *Boston Med. and Surg. Jour.*, vol. clii. p. 713



to headache, as contrasted with 31 per cent. having sight, and 29 per cent. of those with partial or acquired blindness. It would seem from these figures that half the headaches in health are due to eye-strain. The headache, when present among those totally blind since infancy, partook sufficiently often of the migrainoid character to preclude the supposition that all migraine is due to eye-strain. The results of Walton's study seems to indicate that while migraine and migrainoid headaches have a constitutional basis, and while other factors than eye-strain may act as exciting causes, still, eye-strain is one of the most, if not the most, important of these exciting causes, and steps for its relief are imperative. Then Walton points out why glasses are often prescribed without relief. In no case, he says, has correction of refraction been given a thorough trial until the glasses are properly centred, their continued readjustment is practised, the patient looks as much as possible through their centres instead of from side to side, efforts are avoided at straining the eyes to see distant objects with the glasses, and spectacles instead of eyeglasses are used, and the use of spectacles is constant, not intermittent. Glasses will be insufficient where obsessive tendencies and other signs of constitutional peculiarity accompany errors of refraction, and efforts at the correction of refraction will prove unavailing in the proportion in which the peculiarities exist.

**Cerebral Localization.** LOCALIZATION OF SENSATION. A case under my<sup>1</sup> observation, which seems to show very clearly that the cortical sensory areas for the limbs are distinct from one another is the following: A man was perfectly well until July 21, 1904. He was struck on that day over the right parietal lobe with a club by a person who intended to injure him. He was unconscious one or two hours and was confined to his bed about ten days after he received the blow. He was unable to move the fingers of his left hand during the two weeks following the injury. It is impossible to say whether this inability was the result of motor weakness or of sensory disturbances. He could move his lower limb the day following the injury. He is uncertain as to whether the lower part of his face was paretic or not. The hand at first felt "dead," and he has had paræsthesia in it since the injury. He has never had any subjective or objective disturbance of sensation in the left lower limb or face.

His condition on December 11, 1905, I found as follows:

The movements of the left upper limb were awkward, although the limb could be moved freely at all parts and was not weak. He was unable to button his coat with his left hand alone when his eyes were closed because of the inco-ordination of the fingers. The sense of posi-

<sup>1</sup> Journal of Nervous and Mental Disease, February, 1906, p. 117.

tion was greatly impaired in the fingers of his left hand. Stereognostic perception was also greatly impaired in the left hand. While sensations of touch, pain, and temperature were diminished, but not to the same degree as were the sense of position and stereognostic perception. The left lower limb was not affected and sensation in the left side of the face was normal.

Extremely interesting in this case are the marked sensory alterations of the left upper limb, with no disturbances of the left side of the face and of the left lower limb, and no motor palsy of the left limbs; the symptoms resulting from a blow over the right parietal lobe. The case seems to indicate that the sensory centre for the upper limb must be distinct from those for the face and lower limb. I am inclined to place the lesion in the lower part of the parietal lobe.

**ASTEREOGNOSIS.** Kramer<sup>1</sup> believes that no case of touch paralysis (astereognosis) without some sensory changes has been observed, but in some cases the sensory disturbances are not sufficient to explain the astereognosis, and in others far greater sensory changes occur without causing astereognosis; it is probable, therefore, that there is a certain independence of the stereognostic perception. When only touch, pain, and temperature sensations have been tested the examination is incomplete. Attention should be paid to the sensations of movement, of localization, etc. Kramer reports a number of very interesting cases. Astereognosis in infantile hemiplegia without sensory disturbances may occur, because the motor paralysis developed before the child had acquired stereognostic perception. In one case especially sensory disturbances from a cortical lesion were confined to one upper limb and were without motor palsy; this symptom-complex is uncommon.

**LOCALIZATION OF MUSCLE GROUPS.** It is believed by many that cortical centres exist for the different groups of muscles that move the various parts of the limbs, so that, for example, when the centre for the shoulder is destroyed voluntary movement of the shoulder muscles becomes impossible. The cases supporting this belief are not very numerous. Bonhoeffer has expressed the opinion that an incomplete lesion of the centres for a limb causes most disturbance in the distal portion of the limb, where function is most highly differentiated, and that a cortical paralysis confined to the proximal part of the limb cannot occur. The fingers, therefore, are most affected in paralysis of the upper limbs, and paralysis confined to the shoulder or elbow is impossible. O. Fischer,<sup>2</sup> in discussing this subject, alludes to the fact that the most highly differentiated muscles are not always most affected, and he refers to the cases of hemiplegia observed by Pick and Oppenheim, in which

<sup>1</sup> *Monatsschrift f. Psychiatrie und Neurologie*, February, 1906, p. 129.

<sup>2</sup> *Ibid.*, August, 1905, p. 97.



the extensors of the fingers were so much more affected than the flexors that the appearance of musculospiral palsy was presented. He refers also to a few cases of cortical lesion with paralysis confined to a portion of a limb, and to a case of cysticercus of the brain reported by Maydl which he (Fischer) now describes with more details. After the removal of a cysticercus of the cerebral meninges the entire upper limb became paralyzed, but improvement occurred, and finally the paralysis was almost confined to the little and ring fingers. There seems, therefore, in this case to have been a centre for these two fingers distinct from that controlling the other fingers.

**Aphasia.** LESION OF RIGHT SIDE OF BRAIN CAUSING APHASIA. The case reported by C. K. Mills and T. H. Weisenburg<sup>1</sup> of *word-blindness* as a result of a lesion in the right cerebral hemisphere is remarkable in that the man was right-handed. He had an apoplectic stroke at the age of thirty-five years, and became completely hemiplegic on the left side and almost completely aphasic. A year later he was able to walk with the usual hemiplegic gait. Four years after his attack he was still markedly hemiplegic, but he was not word-deaf, or if so, only to a very limited degree and he was not motor aphasic. Immediately after his attack he had become word-blind and letter-blind, and after four years the word-blindness and letter-blindness remained in a large degree. He was not object-blind, and distinctly recognized persons and knew the use and nature of objects about him. He knew a few letters which he had learned as the result of many months of teaching, but he could not pick out from the midst of a word any of these letters. He could recognize only a few words. He could sign his own name and could add the words "and wife," but could not read these words afterward. He was, therefore, both alexic and agraphic. He was born right-handed, and ate, wrote, and did by preference almost everything with his right hand. When he was four years old he broke his right arm, and during the time he was unable to use it he learned to do many things with his left hand, but he was not ambidextrous in the ordinary sense of the term. This seems, therefore, to have been a case of word-blindness in a right-handed man from a lesion of the right cerebral hemisphere.

**MOTOR APHASIA WITHOUT AGRAPHIA.** Byrom Bramwell<sup>2</sup> has observed a clinical case of this character. He is unable to decide whether the lesion was probably cortical or subcortical. He knows of no case in which such complete and persistent motor aphasia was the result of a subcortical lesion; such marked and persistent motor-vocal aphasia, in his opinion, is suggestive of a cortical lesion, of destruction of the motor-vocal speech centre.

<sup>1</sup> Medicine, November, 1905.

<sup>2</sup> Lancet, 1905, vol. ii. p. 1027.

His patient was right-handed. She understood everything that was said to her (no word-deafness), she was totally unable to speak (complete motor aphasia), she could read quite well (no word-blindness), and did not have hemianopsia. She had difficulty in holding a pen or pencil, but seemed to be able to write quite well if it were not for the manipulatory defect. She wrote her name and a short sentence dictated to her (no agraphia). She correctly indicated on her fingers the number of syllables in the following words: "papa," "mamma," "Constantinople." She was quick at understanding signs. So far as could be judged her intellectual faculties were not affected in any way. The sole defect seemed to be inability to speak (motor aphasia). She wrote a well-constructed letter of considerable length. She regained much of her speech within a few months.

Broadbent,<sup>1</sup> in discussing this case, says no example of such complete loss of speech, with such complete retention of the power of writing, has, so far as his knowledge goes, been published. He refers to impairment of articulation in this case. Sixteen months after the attack she still spoke thickly and had the greatest difficulty with labials. In ordinary motor aphasia the few words which the patient retains, he says, are uttered distinctly, the defect is not articular. Broadbent thinks the lesion must have been subcortical and probably at some depth from the cortex.

**Hemiplegia.** HEMIPLEGIA FOLLOWING DIPHTHERIA. Rolleston<sup>2</sup> has found the records of 65 cases in which hemiplegia followed diphtheria, and to these he adds the notes of a case of his own. Twenty were males, thirty females, sex was not mentioned in fifteen. The ages ranged from one and a half years to fifteen. Right hemiplegia occurred in 38, left in 22, and no details were given in 5. No cases occurred in the first week of the disease, in the second week 9 occurred, in the third 20, in the fourth to sixth 11. In 14 cases where no exact date is given, the hemiplegia is said to have developed in convalescence, in 11 cases no time is given. Recovery occurred in 43, death in 18, no mention of termination is given in 4. Necropsies were held in 15 cases. Hemorrhage was found in 1, thrombosis in 2, embolism in 10, embolism and thrombosis in 1, and sclerotic atrophy of one hemisphere in 1. In all the cases where details were given the initial faucial attack was severe.

**ONSET OF HEMIPLEGIA.** A. E. Jones<sup>3</sup> has studied hemiplegia and concludes that rest in bed, and especially sleep, protect to some extent against cerebral hemorrhage. Severe exertion and time of day appear to have had too much stress laid on them in the past. Consciousness is lost at the onset in half the cases of occluding lesions and three-quarters

<sup>1</sup> *Lancet*, 1905, vol. ii. p. 1135.

<sup>2</sup> *Review of Neurology and Psychiatry*, November, 1905, p. 722.

<sup>3</sup> *Brain*, 1905, vol. xxviii. p. 527.



of hemorrhage lesions. It is transitorily affected in many of the remaining cases, but we have no accurate knowledge as to the depth or the duration of the coma in the various lesions or its relation to the intensity of the paralysis. The immediate prognosis is much graver when the onset is apoplectiform; especially is this so in cases of hemorrhage. Intraventricular hemorrhage is nearly always secondary and may not cause loss of consciousness. The immediate prognosis is much graver in cases of hemorrhage than in cases of occluding lesions. Of the cases in which blood is found in the ventricles, 60 per cent. die in the first twenty-four hours, and 90 per cent. in the first week. It is not very rare for life in such cases to be prolonged a few weeks. There is no indication that hemorrhage affects the right side of the brain more than the left. Occluding lesions may affect the left side more than the right for all we know to the contrary.

**MICROGRAPHIA IN HEMIPLEGIA.** Löwy<sup>1</sup> has observed a case in which micrographia followed right hemiparesis. The patient found that his writing had become exceedingly small, so small that he could not read it. He made no mistakes in writing, every letter was in its proper place, but he was unable to make the letters large. The writing with pencil was better than with pen. The disturbance had disappeared two days after the first examination, and was attributed by Löwy to rigor, which increased with the attempt to write. There was no rigor in other movements of the hand, and all other functions of the hand and finger muscles were well performed. It was merely an impairment through rigor of the co-ordinated movements of writing.

**Amaurotic Family Idiocy.** Vogt<sup>2</sup> thinks that cases of the same character as amaurotic family idiocy may occur in later childhood, and he refers to those reported by Higier, Freud, and Pelizaeus. In the later form, as in the earlier, the family tendency is well shown, and many of the children belong to neuropathic families. Blindness, paralysis, and dementia are the characteristic symptoms. The blindness begins slowly and progresses gradually. Paralysis may be flaccid or spastic, and its commencement and course are gradual. The dementia also develops gradually. In the later form the Jewish race is not so liable to the disease, and the peculiar macular findings are absent, and only atrophy of the papilla develops; the onset of the disease is from the fourth to the sixteenth year, but the children of the same family are affected at about the same period; the children are born normal.

The cellular changes of amaurotic family idiocy are so peculiar that some time ago I called attention to the same alterations occurring in two

<sup>1</sup> *Monatsschrift f. Psychiatrie und Neurologie*, 1905, vol. xviii. *Ergänzungsheft*, p. 372.

<sup>2</sup> *Ibid.*, vol. xviii.

cases of disease in children of more advanced years, and suggested that a type of disease much like amaurotic family idiocy probably exists, but begins later in life. Again in January of 1905, I<sup>1</sup> returned to this subject.

The cases of amaurotic family idiocy described by Spielmeyer<sup>2</sup> also differ from those hitherto recognized as belonging to this disease. The children were healthy until six years of age, but at this period mental failure associated with epilepsy began. Four out of the five children were affected, the one escaping being the eldest. Progressive retinal atrophy of the type of retinitis pigmentosa began at the same time as the mental failure. Mental weakness soon developed into dementia, and within a few years the blindness became complete, but there were no signs of muscular paralysis. Three of the children have died of pulmonary tuberculosis during the first years of puberty. The cause of the disease is unknown, although the author suggests congenital syphilis, and does not seek to identify it with the more familiar disorder of the same name described by B. Sachs. In two cases that have come to necropsy the macroscopic findings were negative, but microscopically the nerve cells throughout the central nervous system were found much diseased. On account of Spielmeyer's observations in connection with the cases that I have described it seems not improbable that we may have to enlarge our conception of amaurotic family idiocy.

**Bulbar Palsy.** Schlesinger<sup>3</sup> has observed a peculiar disturbance of speech occurring with paralysis of the soft palate. The speech changes according as the patient is lying down or sitting, and becomes more distinct when the patient is lying down. The symptom is not constantly present in the same case, nor is it seen in every case of paralysis of the soft palate. The explanation offered is that when the patient is lying down the space between the posterior wall of the pharynx and the soft palate is lessened.

**Meningitis. EPIDEMIC FORM.** An important discussion has been held over epidemic cerebrospinal meningitis before the Berliner medizinische Gesellschaft. Westenhoeffer,<sup>4</sup> who has studied the pathological material from twenty-nine cases of epidemic cerebrospinal meningitis, has found that the meningitis always begins behind the optic chiasm over the sella turcica. The cavities nearest to the nasopharynx are diseased, whereas the ethmoidal sinuses communicating with the anterior part of the nose are never affected. Strabismus is one of the early signs of the meningitis, and is associated with headache and vomiting; the former is explained by the place of commencement of the meningitis. The disease attacks

<sup>1</sup> American Journal of the Medical Sciences, January, 1905.

<sup>2</sup> Neurologisches Centralblatt, January 16, 1906, p. 51.

<sup>3</sup> Ibid., p. 50.

<sup>4</sup> Berliner klin. Wochenschrift, June 12, 1905, No. 24.



chiefly children under ten years of age, and seldom adults, but only one or two members of a family are likely to be affected. They are those who have hypertrophic pharyngeal tonsils, swelling of lymph glands, large Peyer's patches, and large thymus glands, *i. e.*, children of scrofulous habitus or lymphatic constitution. The disease is probably contracted through inhalation, the portal of entry is the posterior nasopharynx, especially the pharyngeal tonsil. The meningitis is at first always basal. The Weichselbaum-Jaeger meningococcus is found in the majority of cases, but there is no proof that it is the only causal micro-organism, especially as other forms of cocci are found mingled with these.

Kirchner<sup>1</sup> believes the disease is not very contagious, but that it may be carried by a healthy individual to another person. The immunity of most persons is very great, and the organism has probably little vitality.

Grawitz<sup>2</sup> points out that tuberculous meningitis may resemble the epidemic form so closely as to make a differential diagnosis exceedingly difficult. Tubercle bacilli are not found in the cerebrospinal fluid obtained by lumbar puncture from every case of tuberculous meningitis, but the cells in the epidemic form are polynuclear pus cells, and in the tuberculous form chiefly lymphoid cells. The leukocytes in the blood are not increased in the epidemic form, whereas in the tuberculous form there is distinct leukocytosis consisting chiefly of polynuclear cells, in contrast to the lymphocytosis of the cerebrospinal fluid. The tuberculous meningitis is much more fatal than the epidemic variety.

In the treatment of epidemic meningitis Grawitz attempts to remove the pus so far as possible from the lumbar region by puncture, and to increase diuresis by the administration of fluids. He administers saline enemas several times daily.

Heubner<sup>3</sup> places the recoveries from the epidemic variety at 50 per cent. He mentions that the tuberculous meningitis may occur as an epidemic, and that contrary to the statements concerning the early disappearance of the meningococcus, he has found it on the twenty-sixth and on the thirty-third days of the disease.

Senator<sup>4</sup> emphasizes the frequency of herpes or other eruptions (urticaria) in the epidemic meningitis. He finds lumbar puncture gives temporary relief, he recommends also hot baths, but as it is difficult to place an adult in a hot bath, he employs the hot air apparatus for them.

Michaelis<sup>5</sup> believes that the Fraenkel pneumococcus, as well as the Weichselbaum-Jaeger diplococcus, may cause epidemic meningitis.

As *pilocarpine* is employed to relieve intraocular tension Vohryzek<sup>6</sup> recommends that it be tried in cases of epidemic cerebrospinal menin-

<sup>1</sup> Semaine Méd., July 12, 1905, p. 330.

<sup>2</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>3</sup> Ibid.

<sup>6</sup> Ibid.

gitis, and states that he has found it of benefit in these cases. It should be given by the mouth in doses of 0.05 gram to 0.07 gram for adults, and 0.02 gram to 0.04 gram for children. In his experience no bad results have followed the employment of pilocarpine.

**Reflexes.** IN ANÆSTHESIA. The condition of the tendon reflexes during anæsthesia is not generally known, and, therefore, the observations of Lannois and Clément<sup>1</sup> are important. These investigators have found that during anæsthesia first the cutaneous and conjunctival sensation disappears, but that the patellar reflexes are first exaggerated and later are lost. Ankle clonus begins to appear very soon after the conjunctival sensation has been lost, and increases as the anæsthesia deepens, and persists even after the patient awakes. It behaves differently from the patellar reflex, which disappears as anæsthesia advances. Ankle clonus is entirely independent of the state of muscular tone, and may be intense when muscular flaccidity is pronounced. It is of importance to observe the exaggeration of the ankle clonus during the anæsthesia, as it is an indication of the depth of the anæsthesia.

IN DIPHTHERIA. J. D. Rolleston<sup>2</sup> has investigated the tendo Achillis jerk in 100 cases of diphtheria and his conclusions are:

1. The tendo Achillis jerks are affected in a considerable proportion of all cases of diphtheria, though less frequently than the knee-jerks.

2. The frequency and extent to which these are affected bear, like albuminuria and paralysis, a direct relation to the character of the initial faucial attack.

3. They are completely abolished in all cases of diphtheritic paraplegia.

4. Their absence may be the only evidence of loss of motor power in the lower limbs.

5. Like the knee-jerks, they are liable to be affected at an early stage of the disease, and to remain absent after disappearance of all diphtheritic paralysis, properly so-called.

6. Like the knee-jerks they may be unequally affected on the two sides, and, like the former, they may be unusually brisk before they become sluggish and finally disappear.

7. The Achilles-jerk, like the knee-jerk, after it has been lost, may reappear on one side before it does so on the other.

## DISEASES OF THE SPINAL CORD.

**Tabes.** RETURN OF PATELLAR REFLEXES. That return of the patellar reflex in tabes after hemiplegia has happened is well known, but it may

<sup>1</sup> *Revue Neurologique*, May 30, 1905, p. 511.

<sup>2</sup> *Brain*, Spring, 1905, p. 68.



occur even without hemiplegia. Julius Donath<sup>1</sup> reports a case of tabes in which the patellar tendon reflex and Achilles tendon reflex returned twenty-two months after they were first observed to be lost; they were weak but after five months more the patellar reflexes became lively. Berger has described the return of sensation and also of the patellar reflex in tabes, and this is the only reference to the subject Donath could find in the literature. Eichhorst has described a disappearance of pupillary rigidity in tabes, and since the appearance of his paper his observation has been confirmed by a few others. If one is not aware of the possibility of a return of function in tabes he may be inclined to attribute faulty observation to himself or someone else. The condition of the pupils may vary within a short period of time.

**SENSITIVENESS OF THE TENDO ACHILLIS IN TABES.** Abadie<sup>2</sup> states that when the tendo Achillis of a healthy person is gradually compressed between the fingers a disagreeable sensation amounting to pain is produced, the same is true of other tendons, although the phenomenon is not so easily produced. In tabes this sensitiveness of the tendo Achillis is diminished or lost; it was lost in twenty-two cases and diminished in ten cases out of forty chosen at random. The sign is usually, but not always, associated with impaired or lost Achilles tendon reflex, but one may be present and the other absent. The loss of sensitiveness in the tendo Achillis is an early sign of tabes, and, therefore, of value where the diagnosis may be difficult, but it may occur in hysteria.

**DISTURBANCES OF SENSATION.** Marinesco<sup>3</sup> believes that the *sensation of pressure* has been neglected, and that more attention should be paid to the condition of this form of sensation. He has examined cases of tabes, paraplegia, hemiplegia, etc., and has found that there may be great differences in the cutaneous sensations and that of pressure and bony sensation as tested by the tuning fork. The sensation of pressure and sensation of vibration he regards as two forms of bony sensation, but they are not always affected to the same degree. The sensation of pressure in the bones, tendons, aponeuroses, muscles, etc., he calls *baræsthesia*, and disturbance of this sensation is *baranæsthesia* or *barhypæsthesia*. There may be (1) alteration of all forms of sensation; (2) abolition of sensation both to pressure and to the tuning fork, or to one of these, with preservation of all other forms of sensation; (3) abolition of sensations of temperature and pain with preservation of all other forms of sensation, as in syringomyelia; or (4) alteration of sensations of temperature, touch, and pain with preservation of sensation of pressure and vibration.

This investigation of Marinesco has an important support in the recent

<sup>1</sup> Neurologisches Centralblatt, June 16, 1905, p. 546.

<sup>2</sup> Semaine Méd., September 20, 1905, p. 447.

<sup>3</sup> Ibid., November 29, 1905, p. 565.

paper published by Henry Head.<sup>1</sup> The latter had the radial and external cutaneous nerves in his own arm divided near the elbow. The operation produced loss of all forms of cutaneous sensibility over an extensive area on the radial half of the forearm and back of the hand. Stimulation with cotton-wool, the prick of a pin, the application of all forms of heat and cold, were unappreciated, and the two points of the compasses could not be discriminated, even when separated to the furthest extent possible. But if this part were touched with the point of a pencil, the head of a pin, or even with the ball of the finger, the stimulus was at once appreciated, and the point of application localized with remarkable accuracy. Pressure, which had previously caused a sensation, was no longer appreciated when applied to the skin lifted from the subcutaneous structures to form a ridge. This showed that the sensibility to pressure was not due to nerves still remaining in the skin after the operation. Head concludes that the fibres subserving deep sensation, and answering to pressure and to the movements of parts and even conveying sensation of pain if the pressure is excessive, run mainly with the motor nerves and are not destroyed by division of all the sensory nerves to the skin.

**TABETIC FOOT.** Schwab and Allison,<sup>2</sup> after studying fifteen cases of tabes during a period of two years, have concluded that the foot of the tabetic with any degree of ataxia in the lower extremities is a pronated foot; that the effect of this pronation leads to muscular strain on the ankle, knee, hip, and spine, and that this with the hypotonia tends to break down the long arch, thus producing a faulty mechanical instrument by which walking is accomplished. This pronated foot is believed to play an important and hitherto unrecognized role in the production of the ataxic gait. Correction of this faulty mechanism by means of a suitable shoe tends to increase the ability of a tabetic to learn to walk normally, and the shoe should be employed in conjunction with the Fraenkel method of training ataxics.

**ATROPHY OF TRUNK.** Dejerine and Leenhardt<sup>3</sup> have reported a case of tabes with atrophy and paralysis on one side of the muscles of the back and abdomen. Scoliosis occurred as a result of the muscular atrophy.

**DURATION OF LIFE IN TABES.** According to Marie and Mocquot, tabes has not much influence upon the duration of life, but this opinion has been disputed. It is believed now that tabes not infrequently makes its appearance after the fiftieth year, and Erb explains this by a late syphilitic infection. He believes that tabes usually appears within twenty years after the infection, and especially between the sixth and fifteenth

<sup>1</sup> Brain, 1905, vol. xxviii. p. 99.

<sup>2</sup> Journal of the American Medical Association, December 16, 1905, p. 1840.

<sup>3</sup> Revue Neurologique, December 30, 1905, p. 1218.



years, but it may appear twenty-five or thirty-five years after the infection. Dejerine has reported a case occurring after an interval of thirty-eight years, and Raymond one after an interval of forty-five years. Long and Cramer<sup>1</sup> have studied the cases of tabes in the service of Bard during five years, and have observed the first symptoms appearing from fifty to seventy years in fifteen cases out of forty-six. In three cases tabes appeared thirty-six, forty, and forty-two years respectively after the syphilitic infection.

Goldflam<sup>2</sup> shows that although the duration of life in tabes seems to be long according to the investigations of Marie and Mocquot it is less than in healthy persons. Gastric crises do not usually cause death, but he has observed a case in which they caused a fatal termination through loss of blood.

Stembo<sup>3</sup> thinks he has observed singultus crises in tabes.

**SANTONINE IN CRISES.** Collet<sup>4</sup> has found that 15 cg. of santonine three times daily is of much service in the treatment of the *laryngeal crises* of tabes. After cessation of the attacks he has continued the treatment two months.

**Myelitis.** Myelitis is seldom seen in a child so young as five years; if we exclude anterior poliomyelitis and the so-called compression myelitis, but Drummond<sup>5</sup> has observed a case of this kind. Diarrhœa occurred several times before the onset of the spinal symptoms, and it was thought that the latter may have been of toxic origin. Weakness and spasticity of the lower limbs, disturbance in the function of bowels and bladder, priapism, and ankle clonus were the most important signs of the myelitis. Sensation and the electrical reactions were not disturbed. Improvement began after the symptoms had lasted a month and progressed slowly, and the boy became able to run. The case seems to have been one of thoracic myelitis as diagnosed by Drummond.

**Poliomyelitis.** The clinical study of eighty-five cases of acute anterior poliomyelitis that W. Baumann<sup>6</sup> has made has given some valuable facts regarding the distribution of the paralysis. It appears that the peroneal nerve is especially liable to become paralyzed in poliomyelitis, as well as in other paralytic diseases implicating the lower limbs. The greater involvement of this nerve may be due to the blood supply of the nerve, to the exposed position of the nerve, or to over-use. The peroneal nerve receives many small vessels, and Hoffman believes that in the stretching of this nerve these vessels are injured and the circulation disturbed. In

<sup>1</sup> Revue Neurologique, February 15, 1906, p. 110.

<sup>2</sup> Neurologisches Centralblatt, November 1, 1905.

<sup>3</sup> Ibid.

<sup>4</sup> Semaine Méd., June 7, 1905, p. 271.

<sup>5</sup> Review of Neurology and Psychiatry, November, 1905, p. 718.

<sup>6</sup> Monatsschrift f. Psychiatrie und Neurologie, June, 1905, p. 485.

poliomyelitis a nerve so poorly nourished as the peroneal may degenerate and be incapable of regeneration after its nerve cells in the spinal cord are injured. The peroneal nerve arises from the lumbosacral trunk entirely or in greater part, and its fibres rest upon bone while passing through the pelvis, whereas the fibres of the posterior tibial nerve arise in the sacral nerves and rest upon the pyriformis muscle. The peroneal nerve being more exposed is still more subject to degeneration when its nerve cells in the spinal cord are partially damaged. The muscles of the peroneal supply are much employed in walking and in the lifting of the foot, therefore, the over-use of these weakened muscles in poliomyelitis also may be a cause of peroneal palsy.

Baumann has found that the distal muscles of the upper and lower extremities are much less frequently paralyzed than the proximal in acute anterior poliomyelitis. The lower limbs are more frequently paralyzed than the upper in this disease. This may be because the centres for the former are further away from the vital regions. Most cases occur within the first or second year of life. Under the tenth year males and females seem to be affected nearly equally, but above the tenth year the disease is more common in males.

**PARALYSIS OF THE ABDOMINAL MUSCLES.** It is singular that the abdominal muscles are so rarely affected in anterior poliomyelitis and, therefore, that the thoracic portion of the cord should so often escape, even in those cases in which both the upper and lower limbs are paralyzed. The paper by Ibrahim and Hermann<sup>1</sup> on paralysis of the abdominal muscles in acute anterior poliomyelitis is a valuable contribution. Oppenheim has made a careful study recently on this form of paralysis occurring from other causes. He found all the abdominal muscles affected, and concluded that the innervation of these muscles is from many nerve roots, and that the paralysis varies in intensity but not in the portion of the abdominal muscles affected. Ibrahim and Hermann, on the contrary, found that the rectus abdominis in almost all their cases of acute anterior poliomyelitis escaped, and because of contractile power in this muscle the abdominal wall did not expand like a sail, but protruded only at the side and formed a globular or oval tumor. They also found that the other abdominal muscles were not uniformly paralyzed, so that the base of the tumor varied in size in the different cases. The difference in their observations and Oppenheim's they explain by the cause of the paralysis in their cases, viz., acute anterior poliomyelitis. An examination of the photographs accompanying their paper shows a striking condition in the tumor-like protrusion of the lower and lateral part of the abdominal wall on one or both sides.

An unusual case of acute anterior poliomyelitis has been observed by

<sup>1</sup> Deutsche Zeitschrift f. Nervenheilkunde, vol. xxix., Nos. 1 and 2, p. 113.



Clopatt.<sup>1</sup> The left upper limb was paralyzed and flaccid, and in addition ptosis and myosis on the left side were observed. The myosis gradually became less perceptible. The ocular symptoms were attributed to a lesion of the ciliospinal centre in the spinal cord.

CHRONIC ANTERIOR POLIOMYELITIS. There are few cases in literature of chronic anterior poliomyelitis with necropsy, but one that may be placed under this heading has been studied clinically by Dr. Moleen<sup>2</sup> and pathologically by me. A man, aged thirty-seven years, probably syphilitic, was afflicted with sudden paralysis of the group of muscles innervated by the left peroneal nerve; complete loss of faradic irritability developed in a week, and this was followed by rapid wasting and slight diminution in size of the entire leg; the deep reflexes were present and increased, but not excessively, and were lost where the muscles were much atrophied; the symptoms were confined to the left lower extremity and were without change during three months; no fibrillary tremor, sensory disturbance, weakness of the hands, nor cranial nerve symptoms were present. One year later there were slight general emaciation, complete wasting of the thenar and hypothenar eminences, and, to a less extent, of the interossei muscles; atrophy and paresis of the tongue and pharynx, fibrillation throughout the body, including the tongue, and tendon reflexes still moderately increased. There were no marked electrical changes, except in absolutely wasted muscles, and no bladder, bowel, or sensory disturbances. The man was becoming more emotional and dysphagic, and had rapidly increasing pulse and respiration.

The important alterations were disappearance of many of the nerve cells of the anterior horns of the spinal cord and of motor cranial nerves in the medulla oblongata, of the anterior roots of the lumbar and sacral regions (cervical region was injured), and of the motor nerves of the medulla oblongata, and numerous small hemorrhages in the gray matter, especially in that of the spinal cord.

Amyotrophic lateral sclerosis, progressive spinal muscular atrophy, chronic anterior poliomyelitis, and neurotic form of muscular atrophy had to be considered in diagnosing this case, but the sudden commencement in one lower limb, the paralysis preceding the atrophy, the comparatively rapid development of the symptoms, the absence of sensory disturbances, and the pathological findings justify a diagnosis of chronic anterior poliomyelitis. The prompt tendon reflexes were unusual, but they were present in some of the reported cases. The degeneration of the crossed pyramidal tracts in our case was very slight and perceptible only by the Marchi method, and, therefore, could not have existed long. The case shows, however, that the distinctions between amyotrophic

<sup>1</sup> Deutsche med. Wochenschrift, September 21, 1905, p. 1495.

<sup>2</sup> American Journal of the Medical Sciences, December, 1905, p. 1025.

lateral sclerosis and chronic anterior poliomyelitis are not always to be sharply made.

**Unilateral Ascending Paralysis.** C. K. Mills<sup>1</sup> has reported another case of this type of paralysis. The patient, in August 1904, first discovered some weaknesses of the right lower extremity, although it may have been present in mild degree before. The weakness and awkwardness in using the limb very gradually increased until about one or two months before coming under observation, since which time the physician in attendance said that the impairment had increased more rapidly. The woman had suffered no pain in the extremity, back, or head, and had no symptoms of cerebral disease. She had occasional headaches which seemed to be of migraine type, and now and then had slight vertigo, but this was probably due either to the condition of her stomach or to some arterio-sclerosis. She had no detectable nervous affection except in the right lower extremity and possibly a very slight weakness in the upper; so slight as to be somewhat doubtful.

Examination of the right lower extremity showed paresis of moderate degree in the entire limb, that is, all movements were impaired in force without definite localized palsy of any group of muscles. The right patellar reflex was greatly exaggerated and patellar clonus could be elicited. Persistent ankle clonus was present on the right side and also a Babinski response. On the left side the patellar reflex was somewhat prompter than normal.

Mills believes that this is a motor affection best explained by degeneration of that portion of the pyramidal tract which passes from the motor cortex to the lumbosacral cord.

In the case that L. Newmark<sup>2</sup> studied the chief features were weakness befalling successively the lower and upper extremities of one side, flaccidity of the paralysis associated in the lower limb with increase of the tendon reflexes and abnormality of the plantar reflex, while in the upper limb there was no exaggeration of the reflexes; and the uniform wasting in the affected extremities without alteration of the behavior of the muscles to the electric currents. Newmark thinks his case was most like Patrick's, but it was distinguished from all others by the degree of paralysis to which the disease had progressed in the upper extremity, and the feebleness of the reflexes in that part. Inasmuch as the wasting and spasticity has varied in the reported cases, and were even absent in some, Newmark thinks the condition may not be identical in all the cases. These symptoms, I think, would vary according as the cells of the anterior horn were more diseased or the pyramidal tract was more affected.

<sup>1</sup> Journal of Nervous and Mental Disease, February, 1906, p. 115.

<sup>2</sup> Ibid., March, 1906, p. 182.



**Syringomyelia.** Weisenburg and Thorington<sup>1</sup> have been able to find only two cases in literature in which *syringomyelia* was associated with *optic neuritis*, and both of these were clinical cases. They add another clinical case to the list. Their patient, a girl, aged sixteen years, had gradually become stupid since the age of twelve years, and had shown inco-ordination of gait, and finally became chair-fast. She had lateral spinal curvature to the right in the thoracic region. Movements of the upper limbs were weak and ataxic, and the triceps reflexes were absent while the biceps reflexes were weak. The lower limbs were contracted in flexion at the knees, and the patellar and Achilles jerks were exaggerated. Sensation was normal in the face; but in irregular areas in the left forearm, arm, shoulder, and chest, both in front and back, touch was properly recognized, while pin-prick and heat and cold were not recognized or were called touch. Sensation was normal elsewhere. The case, therefore, seems to have been one of syringomyelia. In a state of repose each eye was decidedly divergent, and well-developed papillitis, more advanced in the right eye, was found.

The authors mention two possible causes for this papillitis, viz., an intracranial growth or internal hydrocephalus, and accept the latter as the explanation for their case. Schlesinger has referred to eleven cases of syringomyelia complicated by hydrocephalus.

**Caries of Vertebrae.** Dupré and Camus<sup>2</sup> have described a case in which rapid paraplegia occurred with implication of the sphincters as a result of unrecognized tuberculous caries of the thoracic vertebrae; later the symptoms of a transverse spinal lesion became even more distinct. Tuberculous pachymeningitis was found, without adhesions between the meninges and the cord or compression of the cord or leptomeningitis, but the cord at the level of the pachymeningitis was softened. Such a finding is rare in caries of the vertebrae.

**Lumbar Puncture in Diagnosis of Spinal Tumor.** A case reported by Léri and Catola<sup>3</sup> shows that by a study of the cells in the cerebrospinal fluid obtained by lumbar puncture we may have a more accurate means of diagnosis of lesions of the spinal cord. A man who had suffered from pain in the back for some time found suddenly that he was unable to rise from his chair, and from that time he was unable to move his lower limbs. The symptoms were those of a lesion of the lower part of the spinal cord, viz., anæsthesia, paralysis, and loss of tendon reflexes in the lower limbs, and loss of control of bladder and rectum. A lumbar puncture permitted fluid to be obtained containing polynuclear cells, also large cells containing each a round or irregular nucleus staining faintly, or multiple nuclei.

<sup>1</sup> American Journal of the Medical Sciences, December, 1905, p. 1019.

<sup>2</sup> Revue Neurologique, January 15, 1906, p. 1.

<sup>3</sup> Ibid, July 30, 1905, p. 768.

On account of these findings the diagnosis of meningomyelitis was made, and it was thought possible that infection had occurred from superficial sores. Cultures on gelatin and bouillon were not successful, and, therefore, the meningomyelitis could hardly be caused by ordinary microbes of suppuration, but might have been produced by the meningococcus, which it is said does not grow in the media employed. A prominence of the spine formed in the lumbar region, and because of this, notwithstanding the polynuclear character of the cells in the cerebrospinal fluid, the diagnosis of Pott's disease was made. The necropsy revealed a tumor that had destroyed the lumbar cord. It was regarded as an epithelioma of ependymal origin.

The examination of the cells obtained by lumbar puncture in this case seems to have shown that vertebral caries was not present unless other infection had occurred, and this did not seem probable. We may, after further experience has been obtained, be able to decide by lumbar puncture whether a tumor of the cord or a meningomyelitis is the proper diagnosis in a doubtful case, but even then we may not be able to accomplish much in treatment.

**Spinal Hemiplegia (Brown-Sequard Paralysis).** Dejerine and Gauckler<sup>1</sup> reported a case of Brown-Séquard paralysis, *i. e.*, paralysis of motion on one side of the body and of sensation on the other side, in which the implication of the upper limb on the hemiplegic side was peculiar. There was complete integrity of the superior root group, viz., deltoid, biceps, brachialis anticus, supinator longus; with weakness of the triceps, common extensor of the fingers, extensor carpi ulnaris and the two radial extensors. Contracture was observed in the flexors of the hand and fingers. The paralysis, in short, was confined in the upper limb to the muscles innervated by the seventh and eighth cervical and first thoracic segments, and the sensory disturbances corresponded to the areas innervated by the eighth cervical and first thoracic segments. The paralysis was without atrophy, and because of this the authors concluded that the nerve cells of the anterior horn were not involved. As the paralysis and contractures were of the root type, they make the exceedingly important statement that the fibres of the pyramidal tract must terminate within the spinal cord in a distribution like that of the roots. In confirmation of this observation, Raymond and Guillain<sup>2</sup> have reported a very similar case. In their case the condition of the hand was much the same as in Dejerine and Gauckler's patient. It is exceedingly important to know that a lesion of the pyramidal tract, or of the anterior horn, may, under certain conditions, cause exactly the same symptoms as a lesion of anterior roots, in other words, that it may give the root type of paralysis.

<sup>1</sup> *Revue Neurologique*, March 30, 1905.

<sup>2</sup> *Ibid.*, July 30, 1905.



**Disseminated Sclerosis.** Disseminated sclerosis confined to the pons causes symptoms that are difficult to properly estimate. In a case reported by O. Maas the diagnosis of pontile encephalitis had been made by Oppenheim.<sup>1</sup> The symptoms were: disturbance of vision, vertigo, paræsthesia in the lower limbs, vomiting, weakness of the muscles of mastication, paralysis of associated ocular movements to the left, contraction of the left pupil, slight right-sided ptosis, slight weakness in the distribution of the left facial nerve, and some weakness of the right limbs. All these disturbances disappeared, but five years later the symptoms were those of advanced multiple sclerosis, and the necropsy confirmed this diagnosis. Maas thinks an encephalitis of the pons may have terminated in multiple sclerosis, a view which Oppenheim shares.

Schuster, in the discussion of this case, called attention to an observation he had made. He has found that the lids are unusually wide apart in multiple sclerosis.

**Relation of Segments of Spinal Cord to Vertebræ. Spinal Localization.** The segments of the spinal cord are not at the same level as the vertebræ of corresponding name, and the relation of these parts may not be the same in any two given individuals. Sex and age cause important variations. Muskens<sup>2</sup> has examined the position of the cord in twenty-two necropsies, and the conclusions he draws from his studies are as follows: " . . . in an operative case we have, in the first place, to take into account the immense individual variations, and the possibility, in every case, that we may have to deal with a prefixed or with a postfixed cord (*i. e.*, one in which the segments have a relatively high or a relatively low situation). If these spinal conditions are disregarded, an exploration in a case of compression myelitis may completely fail, and has, indeed, failed more than once under circumstances otherwise favorable. As a rule, it will be useful to take as landmark for the operation and middle of the incision the spinous process, under which there is most chance of finding the segment that is sought; and, as the uppermost and lowermost points of incision, those spines to which, in extremely *prefixed*, and, on the other hand, in extremely *postfixed* cases, the segment sought for may be subjacent. As a rule, it will be sufficient to remove two or two and a half vertebræ." Muskens gives tables and diagrams made from his observations of the position of the segments of the spinal cord in relation to the vertebræ in the twenty-two cases.

**Sensory Tracts in Cord.** Although there may be some doubt concerning the conclusions reached by Max Rothmann<sup>3</sup> regarding the conduction of sensation in the spinal cord, this paper on the subject is at least one of

<sup>1</sup> Berliner klin. Wochenschrift, July 31, 1905, p. 993.

<sup>2</sup> Review of Neurology and Psychiatry, June, 1905, p. 381.

<sup>3</sup> Berliner klin. Wochenschrift, 1905, Nos. 2 and 3.

the most recent. He believes from experiments on animals and a study of the cases of stab-wound of the cord with necropsy in the literature, that the sensory tracts are as follows: Pain and temperature sensations are represented chiefly in the crossed anterolateral column, but in part in the uncrossed anterolateral column; pressure sensation is more nearly equally represented in the crossed and direct tracts, viz., the lateral, anterior and posterior columns; tactile sensation is represented in the uncrossed posterior and the crossed anterior columns; and sensation of position is represented chiefly in uncrossed tracts, viz., the lateral and posterior columns, but especially the anterior column.

### DISEASES OF THE PERIPHERAL NERVES.

**Neuritis.** A very peculiar and by no means generally recognized affection has been described by v. Frankl-Hochwart under the name of polyneuritis cerebri menieriformis. He understands by this paralysis of cranial nerves, presumably of acute infectious origin, usually on one side, and associated with Ménière's symptoms, viz., tinnitus aurium, vertigo, deafness, vomiting, etc. Six cases of this type have been reported previously, and a seventh is now added by A. Berger.<sup>1</sup> His patient, a man, aged fifty-five years, had the first symptoms on awakening one morning after having been exposed to a draught the night before. Slight fever existed. The symptoms were complete right-sided paralysis, tinnitus and deafness in the right ear, diminished sensation in the right side of the face with herpes, vertigo, nausea, and vomiting. The condition was believed to be the result of infection and exposure to draught. Hemorrhage at the base of the brain was considered, because of the suddenness of the onset, and because the patient had sometime previously had two attacks of unconsciousness; but contrary to this diagnosis were the fever, herpes, swelling about the right ear, tenderness to pressure over the facial and trigeminal nerves, and the gradual disappearance of the symptoms. The nerves affected were the facial, acoustic and sensory portion of the trigeminal on the right side.

In one of the cases reported the facial and acoustic nerves on the left side were affected; in another, the left facial, acoustic and sensory portion of the trigeminal; in four others the facial, acoustic and sensory portion of the trigeminal on the right side. In all the cases, in addition to the disease of the acoustic nerve, the facial nerve, and usually the sensory portion of the trigeminal, have been affected.

**Sciatica.** Spinal anæsthesia, which at first seemed to afford much promise for operations where general anæsthesia was undesirable, has

<sup>1</sup> Neurologisches Centralblatt, September 16, 1905, p. 844.



caused at times so serious complications that physicians have grown very cautious concerning its use. It may be that in *stovain*, so highly recommended by O. Tilmann,<sup>1</sup> we have an agent less harmful than those hitherto employed for this purpose, but it is to be employed when the operation is below the umbilicus. According to Tilmann, it does not cause temporary or persisting serious complications, and yet he speaks of headache, pain in the lower limbs, irregular pulse, and retention of urine during twenty-four hours.

Tilmann has employed it in the treatment of obstinate sciatica, especially with bloodless stretching of the sciatic nerve. In five cases the pain disappeared for four days, and in three of the cases in which the bloodless stretching was performed during the anæsthesia, permanent improvement resulted. The pain returned in the two cases in which stretching was not performed.

**Peroneal Palsy.** Hirschfeld<sup>2</sup> has noticed that when the peroneal nerve is paretic the angle formed by dorsal flexion of the foot is smaller when the lower limb is in extension than when it is flexed at the knee. Flexion of the foot may be practised to advantage when the knee is flexed, as more movement is obtained in this way, and recovery of power is more likely to occur.

**Gonorrhœal Neuritis.** Bernhardt<sup>3</sup> reports a case of neuritis confined to one nerve of an upper limb, the musculocutaneous, and resulting, as he believes, from gonorrhœa. The neuritis developed soon after an attack of gonorrhœa. The case was peculiar in that the nerves of the lower limbs were not affected, that no joint was involved, and that only one nerve was diseased. The gonorrhœal nature of the neuritis seems to have been diagnosed according to the *post hoc ergo propter hoc* argument.

**Arsenical Neuritis.** Neuritis caused by the absorption of arsenic through the skin is uncommon, but Franz Conzen<sup>4</sup> reports a case in which neuritis of the hands occurred in a girl who during eight weeks had in her occupation dipped her fingers in fluid containing arsenic. Gastrointestinal or respiratory symptoms were absent, and the only signs of disease of the nervous system were observed in the hands.

Some years ago I had a patient who had neuritis of the upper limbs from exposing the limbs to water containing hydrofluoric acid. It seems clearly demonstrated that neuritis may be caused by poisons absorbed through the skin.

**Paralysis of Pregnancy and the Puerperium.** This form of paralysis is not always caused by neuritis. In regard to hysterical palsy occurring

<sup>1</sup> Berliner klin. Wochenschrift, August 21, 1905, p. 1065.

<sup>2</sup> Semaine Méd., June 7, 1905, p. 270.

<sup>3</sup> Berliner klin. Wochenschrift, August 28, 1905, p. 1097.

<sup>4</sup> Neurologisches Centralblatt, January 2, 1906, p. 18.

during pregnancy and the puerperium, von Hösslin<sup>1</sup> finds so little evidence of such occurrence that he says hysterical paralysis should be diagnosed only when the functional nature of the paralysis is very evident and every organic affection of the nervous system can be excluded. Short duration of the paralysis is no evidence of hysteria.

He thinks that pregnancy has some bearing on myasthenia gravis, although the cases he presents in support of this opinion are not sufficient to establish the relationship.

Apoplexy occurs during pregnancy independently of nephritis. This may be assumed to be a mere coincidence, or, as v. Hösslin thinks, the pregnancy may be regarded as the cause of the hemorrhage; and in favor of the latter view is the fact that the hemorrhage almost always occurs in the second half of the pregnancy. It may be that the autointoxication of pregnancy causes alteration of the bloodvessels. The great alteration of blood pressure during childbirth is regarded as an important cause of cerebral hemorrhage. Von Hösslin devotes considerable space to the consideration of paralysis in pregnancy resulting from nephritis, thrombosis, embolism, brain tumor, etc.

He then considers the relation of diseases of the spinal cord to paralysis occurring in pregnancy. These are diseases that have developed before or during the pregnancy. In advanced tabes the labor pains may be absent. Multiple sclerosis has been made worse by pregnancy. Where a severe disease of the spinal cord has existed, even causing paraplegia, conception has been known to occur although the libido sexualis was absent. The woman may for some time be ignorant of her pregnancy, the movements of the child may not be felt, but the pregnancy may not extend over the normal period. The location of the spinal disease seems to have no influence upon the pregnancy, the effect may be the same whether the lesion is high or low, but rapidly developing spinal lesions are more likely to interrupt pregnancy than those developing more slowly. Labor has been prolonged in some cases where paraplegia of spinal origin existed, and the delay has been attributed to the paralysis of the abdominal muscles, but this explanation is not satisfactory. In most cases, even of severe spinal cord lesion, labor is very little affected if at all, and progresses in a normal manner without pain being felt by the woman.

Paralysis in osteomalacia is not the result of the disease of the bones, but is the result of a disease of the muscles, and this has the same cause as that of the bones, and the paralysis may be an early sign and develop at a period when bone disease is not perceptible. The paralysis usually begins in the muscles of the pelvis and thighs, especially in the iliopsoas, quadriceps, abductors and extensors of the thigh, and the patient has the

<sup>1</sup> Archiv f. Psychiatrie, vol. xxxviii, p. 730, and vol. xl, p. 445.



duck gait. The paralysis is like that of progressive muscular dystrophy, but in addition the occurrence of muscular contractions, tremor and pain in the muscles, exaggeration of tendon reflexes, and spasticity make the diagnosis possible. The nerve trunks may be tender to pressure, and there may be paræsthesia and fibrillary tremor. Some attention is paid to polymyositis puerperalis.

Paralysis resulting from neuritis may be caused in different ways. It may be traumatic, and then paræsthesia, pain, or paralysis occurs during or immediately following the labor. A frequent and prominent symptom is severe pain in the hips and lower limbs occurring with every labor pain. The traumatic paralysis may be confined to the peroneal distribution, but usually implicates all branches of the sciatic nerve. The more extensive the paralysis is from the beginning, the graver is the prognosis. Neuritis may be caused by extension of inflammation from the organs of the pelvis, and then usually does not immediately follow the labor.

Neuritis occurring during the puerperium may be the result of general infection, and is frequently seen in the ulnar and median nerve distributions; or it may be the result of toxic conditions without puerperal infection, and such neuritis may occur during pregnancy. This form also has a tendency to implicate the ulnar and median nerves. Some believe that toxic material develops during pregnancy and causes vomiting and neuritis. The neuritis does not necessitate interruption of the pregnancy except when the symptoms are unusually grave.

This paper is very long and thorough, presents a critical study of the literature on the various forms of paralysis occurring during pregnancy and the puerperal state, and is valuable to obstetricians as well as neurologists.

**Neuritis of Cranial Nerves.** In rare cases the cranial nerves may be chiefly or alone affected in multiple neuritis, and considerable difficulty may then be experienced to diagnosticate between bulbar palsy and neuritis. Two cases are reported by Comte,<sup>1</sup> in one of which were disturbances of phonation, deglutition, and mastication, with muscular atrophy of the head and neck, but without implication of the limbs. Bulbar syringomyelia was thought of. The symptoms developed rapidly. Lesions of the bulbar nerves and first cervical roots were found, but the central nervous system is said to have been intact. The microscopic study in the second case was less thorough, but the hypoglossal nerve was found diseased. The implication of the upper branch of the facial nerve and of the muscles of the neck, sensory disturbances at the commencement of the symptoms, and the rapid development of the symp-

<sup>1</sup> *Revue Neurologique*, January 30, 1906, p. 94.

toms would make the diagnosis of progressive bulbar paralysis improbable; and yet the bulbar form of multiple neuritis is so rare that an incorrect diagnosis might readily be made.

**Tic Douloureux.** Ostwalt has found that the injection of alcohol and cocaine or of alcohol and stovain is of benefit in the treatment of tic douloureux. The technique of the injection should be read in the original paper. Ostwalt uses 1 or 2 c.c. of 80 per cent. alcohol with cocaine to make the application less painful. The alcohol should be injected at the exit points of the nerves or in the long canals containing the nerves.

The hypæsthesia produced by this treatment lasts often only a few hours or a few days, sometimes two or three months, but the neuralgia does not return in most cases. Usually two, three, or four injections are necessary to abolish the pain, and a period of five to seven days should be allowed to elapse between the injections.

Ostwalt<sup>1</sup> has emphasized this method of treatment in forty-five cases of severe trigeminal neuralgia, but the time has not been sufficiently long to permit final conclusions. Sometimes one injection effects a cure.

This treatment is useful also in spasms of the facial nerve distribution, and arrests the spasms without producing paralysis; also in disturbances in other nerve territories, sciatica, etc. It is worthy of trial in these serious and painful disorders, and seems to be harmless when properly carried out.

Valude<sup>2</sup> has obtained a good result in the treatment of blepharospasm by the injection of 1 c.c. of 80 per cent. alcohol containing a small amount of cocaine near the exit of the nerve from the stylomastoid foramen. Sufficient time has not elapsed to judge of the permanency of the cure.

It may be well to know that *migränin* used in the treatment of tic douloureux may cause discoloration of the skin. E. Hoffmann<sup>3</sup> has had a patient, a boy, aged fourteen years, who took 0.5 gram migränin for headache, and had as a result red spots with itching and burning, on the lower lip and on the left side of the thorax. These changed after ten days to brownish spots. When he later took 1 gram migränin the red spots became numerous. As this preparation is likely to come into use in the treatment of tic douloureux and headache, it is well to know its action.

**Facial Palsy.** Paralysis of the facial nerve occurring from pressure is very rare. I have observed it in one case as the result of an operation on the head. Knapp<sup>4</sup> describes it in a case under his observation. His patient had slept a couple of hours with the cheek upon the table, and when

<sup>1</sup> Berliner klin. Wochenschrift, January 1, 1906, p. 10; and Semaine Méd., May 31, 1905, p. 257.

<sup>2</sup> Semaine Méd., December 27, 1905, p. 618.

<sup>3</sup> Berliner klin. Wochenschrift, July 31, 1905, p. 991.

<sup>4</sup> Monatsschrift f. Psychiatrie und Neurologie, October, 1905, p. 309.



he awoke the face was paralyzed from the pressure, and the faradic and galvanic reactions of the muscles of this side were quantitatively diminished, but not qualitatively. Taste was affected on the anterior two-thirds of the tongue. The patient had not been alcoholic. He recovered within four weeks. The impairment of taste is remarkable, as the injury of the nerve was below the stylomastoid foramen. The author believes that the chorda tympani had a low origin from the facial nerve.

**FACIAL PALSY IN FACIAL HEMIATROPHY.** Gowers<sup>1</sup> calls attention to the diminution in size of the temporal bone in association with that of the other bones in facial hemiatrophy, as shown by the smaller mastoid process and the smaller external auditory meatus. Other bony canals also are narrowed, and among them the Fallopian canal through which the facial nerve passes, and this nerve, therefore, may become paralyzed in facial hemiatrophy. If the canal were contracted, a slighter degree of inflammatory swelling of the sheath of the nerve would impair its function, or the blood supply in the sheath might be altered. There might also be mechanical pressure. In illustration of these remarks, Gowers reports three cases of facial hemiatrophy with facial paralysis. The third was especially interesting as the spinal accessory, pneumogastric and glossopharyngeal nerves were probably implicated. "Facial hemiatrophy" is a misnomer, as the atrophy is not confined to the bones of the face. The condition probably is one of true atrophy and not of arrest in the development of the bone.

**FACIAL PALSY AT BIRTH.** Stein<sup>2</sup> has observed paralysis of the facial and of the hypoglossal nerves on the same side occurring in a child at birth. Facial palsy during birth is usually caused, according to Stein, by compression of the stylomastoid region from a contracted pelvis, by exostosis, or by too prominent a symphysis cartilage. The facial paralysis had disappeared at the end of eight days, while the hypoglossal palsy persisted a week longer.

**ELECTRIC IRRITABILITY IN FACIAL PALSY.** Electrical excitability of the facial nerve is regarded as occurring only in the early period of facial palsy, but Babinski<sup>3</sup> has observed two cases in which it persisted a long time, in one more than a year in a very pronounced form. Mechanical irritability of the facial nerve was also increased. These cases also showed that facial palsy is not necessarily benign and does not always disappear within a few weeks when reaction of degeneration is absent.

**FACIAL PALSY IN TETANUS.** Facial palsy occurring in tetanus is rare, Willard having collected in 1895 the references to seventy-four

<sup>1</sup> Review of Neurology and Psychiatry, January, 1906, p. 1.

<sup>2</sup> Semaine Méd., May 31, 1905, p. 257.

<sup>3</sup> Revue Neurologique, November 30, 1905, p. 1098.

cases. Lloyd<sup>1</sup> has observed double facial paralysis, and he states that his case is the seventh, or at most eighth, of the kind. As he says, in the majority of cases of unilateral facial palsy occurring in tetanus the wound has been on the same side of the face as the paralysis, and the exceptions are open to doubt. In all the cases of facial diplegia, except that of Roberts, the wound has been in the median line of the face, nose, or forehead; but not every wound in the median line has produced bilateral symptoms. Wherever the wound in cephalic tetanus occurs it is in the distribution of the fifth nerve, the most common position being the orbital-nasal-temporal angle. The paralysis involves all the fibres of the seventh nerve, but the reactions of degeneration are not present. Trismus is always a marked symptom, but as a rule the symptoms of cephalic tetanus are not so widespread or severe as in the ordinary type. In a few cases the muscles of the eyes have been paralyzed. Cephalic tetanus is not quite so severe in its manifestations as is the ordinary type. As Lloyd says, the paralysis of the facial nerve in tetanus is remarkable, because tetanus does not cause paralysis in other parts of the body. The facial diplegia proves convincingly that the condition is not one of spasm, as some have attributed the apparently unilateral palsy to a spasm of the opposite side of the face. The inability to close the eyelids, to wrinkle the brow, the passive raising of the lips by the breath on expiration, and the lifting of the flaccid lips by the fingers in attempts at speaking, show that the condition is one of paralysis and not spasm. The subject of cephalic tetanus, especially the bilateral form of the palsy, is presented by Lloyd in this paper in a very interesting manner.

**Lumbago.** Kenyon<sup>2</sup> believes that lumbago may be successfully treated by the local application of tartarated antimony. Unguentum tartarati, B. P., should be rubbed thoroughly twice daily into the painful part until the pustules characteristic of antimony appear. Along with the local treatment a saline aperient mixture containing sodium salicylate should be administered. The number of applications of the ointment required depends greatly on the thoroughness with which it is rubbed in. If this is well done one or two applications are usually sufficient, and no more applications should be made than are necessary to relieve the pain or after a fair crop of pustules have appeared.

## MISCELLANEOUS NERVOUS DISEASES.

**Epilepsy.** Buzzard and Allen<sup>3</sup> have performed some interesting experiments on animals to determine the effect of *choline*, and they have found

<sup>1</sup> Journal of the American Medical Association, October 7, 1905, p. 1072.

<sup>2</sup> British Medical Journal, January 13, 1906, p. 81.

<sup>3</sup> Review of Neurology and Psychiatry, July, 1905, p. 453.



that the repeated introduction of moderate doses of this substance into the circulating fluids of an animal produces neither convulsions nor paralytic phenomena. Very large doses produce convulsions, but the amounts are relatively greatly in excess of what can be produced in the human subject by the ordinary degenerations of the central nervous system. It is improbable, therefore, that the convulsions of general paralysis or of epilepsy are directly or solely produced by the presence of choline in the blood or cerebrospinal fluid. The presence of considerable quantities of choline in the circulation does not produce morbid changes of importance in the central or peripheral nervous system or in the visceral organs of the body.

JACKSONIAN EPILEPSY is a valuable localizing sign, but it is not altogether reliable, and may be a manifestation of so-called idiopathic epilepsy. Occurring in parent and child, however, it is exceedingly rare, and, therefore, the cases reported by Leenhardt and Norrero<sup>1</sup> are of interest. The mother had her first attack when she was ten years old, and after that age the attacks occurred in series of three or four every two or three months. The first attack of each series was like that of ordinary epilepsy, but the second was Jacksonian in type. It began in the tongue, and soon the face, upper and lower limbs of the left side were involved. Consciousness was not lost, the tongue was not bitten, and involuntary micturition did not occur. The third and fourth attacks were less severe, and the lower limb was not involved. Later the attacks became more frequent, but yielded to bromides in large doses.

The daughter had her first convulsion when fourteen years old, and the attacks were right-sided.

OTITIC EPILEPSY has been reported, but many cases are probably of doubtful value, as they do not clearly demonstrate that the epilepsy was caused by the ear disease. As B. A. Randall<sup>2</sup> remarks, some of the cases were hysterical and in others the ear condition has been but an incident in an epileptic patient, and relief has been experienced, as so often follows any intervention in such patients. Where a cessation of convulsions has been the result of a single inflation, the removal of a plug of wax, or the incision or perforation of the drumhead with evacuation of pent-up secretion, it would seem a magnifying of the conditions to call the case one of otitic epilepsy, or to claim a cure; but where the removal of a polyp or of an irritative foreign body has been accompanied by a cessation of long continued convulsions, we have more reason to speak of otitic epilepsy, according to Randall. He reports the case of a boy, aged eight years, who developed epilepsy after acute suppuration of the ear. After the removal of granulations from the mastoid region and finally complete

<sup>1</sup> *Revue Neurologique*, July 30, 1905, p. 750.

<sup>2</sup> *American Journal of the Medical Sciences*, August, 1905, p. 187.

exenteration of the mastoid the boy experienced much relief and had no recurrence of his convulsions for a month.

**TREATMENT OF EPILEPSY.** There is still much discussion concerning the results of the *salt-free diet in epilepsy*. Thus, Thomas and Norrero<sup>1</sup> report the case of a child with hemiplegia dating from birth, in whom Jacksonian epilepsy began at the age of eleven years. The convulsions were attributed to the same cause as the hemiplegia, viz., traumatism of the head at birth, even though about ten years had elapsed between the traumatism and the appearance of epilepsy. This long interval is not so unusual when the lesion occurs in early childhood, and I<sup>2</sup> have reported a similar case, as has also von Monakow.<sup>3</sup>

Chloride of sodium was omitted from the diet and bread was made without salt, and bromide of soda 1.50 gram daily was administered. Improvement under this treatment was marked. In the discussion following the report of this case, Brissaud spoke of his failures with the treatment, and referred to a case in which the salt-free diet was useless, but the patient improved so soon as salt was given to him again. Dejerine, on the contrary, reported three cases in which the salt-free diet had been of benefit. In a previous communication he stated that he had found the salt-free diet of great value in the treatment of epilepsy, both in causing diminution in frequency and severity of the attacks. Marie, Ballet, and Dupré were unable to support this opinion of Dejerine. Ballet attributed whatever improvement occurs to properly regulated habits.

**Hysteria.** Graves<sup>4</sup> has observed a peculiar sensory disturbance nowhere recorded in neurological literature, and one which is apparently constant in hysteria; it is anæsthesia associated with hyperalgesia sharply confined to the areola-nipple area of both breasts. In one case touch and pin-pricks were promptly recognized and accurately localized throughout, excepting within the areola-nipple areas, where touch was not recognized, but pin-pricks were said to be, and appeared to be more painful than in the adjacent skin. The anæsthetic and hyperalgesic area was separated from the normal with hair-line sharpness, and this line was represented by the skin areola margin. His observations have shown that this sensory disturbance is not found in any normal individual, that it is not present in any organic disease, neurosis or psychosis unless hysteria is a complication, and that it is a constant sign of hysteria in males as well as females, even in mild forms. Graves regards this areola-

<sup>1</sup> Revue Neurologique, November 30, 1905, p. 1095.

<sup>2</sup> Journal of Nervous and Mental Disease, 1898, p. 1.

<sup>3</sup> Archiv f. Psychiatrie, vol. xxvii.

<sup>4</sup> Journal of Nervous and Mental Diseases, October, 1905, p. 640.



nipple anæsthesia associated with hyperalgesia as a pathognomonic stigma of hysteria.

**Chorea.** Cramer and Többen<sup>1</sup> obtained micro-organisms from the blood during the life of the patient in two cases of chorea. With one exception these are the only cases in which micro-organisms were found during the life of the patient, although in a number of cases they have been obtained after death. In the first case reported by Cramer and Többen staphylococci were seen in the blood and recovery occurred. In the second case streptococci were obtained before as well as after death, and when injected into rabbits produced in one embolic abscesses of the kidney, and in another erosion of the bulbus aortæ. The authors do not assert that the cocci were the cause of the chorea, but suggest that they may have been agents provocateurs. The micro-organisms that have been found in chorea are of great variety, and it is noteworthy that this is true also of the micro-organisms found in Landry's paralysis, hemorrhagic polioencephalitis, and acute delirium.

**Paralysis Agitans.** It may be well to employ *scopolamine* in the treatment of paralysis agitans. The disease has resisted all drugs hitherto experimented with. Roussy<sup>2</sup> has injected subcutaneously 0.5 to 2 milligrams of scopolamine daily, the dose varying according to the case and the susceptibility of the patient. He remarks that it has a surprising effect upon the different symptoms of the disease. An hour or two after the injection the tremors become less intense or even disappear, the muscular rigidity lessens, and antepulsion and retropulsion and sensation of heat are not so severe. Unfortunately the improvement is transitory and does not last more than twelve or twenty-four hours. The drug is not dangerous if used with care; an aged person should not take more than 0.5 to 1 milligram daily, a strong adult may take 2 milligrams daily after his susceptibility has been tested by an initial dose of 0.5 milligrams.

One of Roussy's patients showed the first signs of paralysis agitans when twenty years of age, a remarkably early age for the disease to develop.

A curious case of paralysis agitans has been observed by Raymond,<sup>3</sup> curious because the tremor began in the tongue and extended later to the lip and muscles of the chin, and was accompanied by abundant salivation. The muscles of the face had a rigid appearance. The tremor affected also the hands, and the movements of the body were suggestive of rigidity. The chief interest of the case is that the tremor began in the tongue and lips.

<sup>1</sup> Monatsschrift f. Psychiatrie und Neurologie, December, 1905, p. 509.

<sup>2</sup> Revue Neurologique, June 30, 1905, p. 644.

<sup>3</sup> Ibid., p. 742.

In another case the symptoms of paralysis agitans were associated with those of lesion of the pyramidal tracts, viz., ankle clonus, Babinski's sign, and some weakness.

**Family Periodic Paralysis.** This disorder is now very generally recognized, but the report of George E. Holtzapple<sup>1</sup> is certainly very extraordinary. His observations have been made during the last twenty-two years in a family of four generations. The total number of this family who have had periodic paralysis is seventeen. Eighteen members have had sick headache. Five have had attacks of paralysis and headache. Fourteen have had attacks of paralysis only (fourteen and five, however, do not make seventeen), and thirteen have had attacks of only headache. The total number afflicted with either paralysis or headache is thirty-two. Of the seventeen who have had attacks of periodic paralysis ten are still living. One of the seven who are dead, died of chronic nephritis. The remaining six died in an attack of paralysis. Fourteen of the paralytic group were observed by Holtzapple. The disease was transmitted through the father having had attacks of paralysis in six instances, through the mother in four instances; through the father having had attacks only of sick headache in four instances, through the mother having had only attacks of sick headache in three instances. In nine instances the disease was transmitted through the father and in eight through the mother. The parents of the first generation were well except the father, who had periodic sick headache. The first generation consisted of five males and five females. Three of the sons had attacks of paralysis, one attacks of headache, and one was unaffected. Of the daughters, four had sick headache, none had attacks of paralysis, and one was unaffected. The relation of periodic headache to periodic paralysis in this family is remarkable.

Bornstein<sup>2</sup> has observed a case of paroxysmal asthenia which he thinks differs from the periodic family paralysis in several particulars. When the attack of paralysis occurred the mental state was much altered, the man became apathetic and depressed. The vasomotor symptoms were more numerous and more intense than in the family periodic paralysis, and these symptoms were free perspiration, cedema of the eyelids and hands, and subjective sensation of cold. Pain was felt in the calves and upper limbs, tenderness to pressure was obtained in the nerves and muscles, and the electrical reactions were different from those of the periodic family paralysis. Bornstein found a lower specific gravity of the urine excreted during the attack. Heredity of the disease was not present in his case. The attacks of paralysis developed later than in the family periodic paralysis. These were the most important differences

<sup>1</sup> Journal of the American Medical Association, October 21, 1905, p. 1224.

<sup>2</sup> Neurologisches Centralblatt, 1905, Nos. 15 and 16.



that Bornstein observed, and yet he regarded his case merely as an atypical example of periodic family paralysis.

**Intermittent Lameness.** Many cases of intermittent lameness of the lower limbs have been reported, but implication of the upper limbs or of the face is rare. Determann<sup>1</sup> has found five observations in which the upper limbs were involved, but none in which the tongue was affected, except in a case of his own. His patient had intermittent paralysis of the lower limbs, of the right upper limb and of the tongue. Pain was not felt in the affected upper limb and the pulse was present. If his patient opened or closed, pronated or supinated the hand he could perform the movement at first very well, but gradually stiffness and weakness developed, and after five to eight minutes the movements became impossible. The voluntary power returned after a rest of half an hour. The disturbance in the left upper limb was slight. The tongue could be moved freely at first, but gradually the movements became impaired without entirely ceasing. If the patient were told to say "Ta-ta" repeatedly the words were uttered with difficulty after two minutes. The rigidity occurring with the exhaustion, the relatively slow development of the weakness, the escape of the left upper limb, and the loss of the foot pulse made a diagnosis of myasthenia gravis improbable.

Intermittent lameness has been found to occur more frequently in Russians, as do also other vasomotor diseases. It has been supposed that a cause may be found in the severe cold of Russia.

Determann confirms the opinion of Erb, viz., that chronic nicotine poisoning is an important cause of arteriosclerosis.

**Myasthenia Gravis.** E. F. Buzzard<sup>2</sup> shows that sensory symptoms may occur in myasthenia gravis; in one of his cases these symptoms were marked, and analgesia and anæsthesia were associated with lightning pains, absent arm-jerks and diminished knee-jerks. Tabes was supposed to be present with myasthenia, but the lesions of tabes were not found. It seems also that mental symptoms and muscular atrophy may occur in myasthenia. Buzzard found that abnormalities of the thymus are not constant features in myasthenia, but lymphocytic deposits, or lymphorrhages, as he calls them, occurred in all of his five cases. Diligent search through thousands of sections was necessary in order to detect them. The symptoms of myasthenia, Buzzard believes, are best explained by assuming the presence of some toxic, possibly autotoxic, agent which has a special influence on the protoplasmic constituent of voluntary muscle and a less specialized influence on the function of other tissues.

Karl Boldt<sup>3</sup> in the report of a case of myasthenia gravis with necropsy

<sup>1</sup> Deutsche Zeitschrift f. Nervenheilkunde, vol. xxix., Nos. 1 and 2, p. 152.

<sup>2</sup> Brain, 1905, vol. xxviii. p. 438.

<sup>3</sup> Monatsschrift f. Psychiatrie und Neurologie, January, 1906, p. 39.

describes the cellular infiltration of the muscles mentioned by several writers as occurring in this disease. The finding now is becoming so frequent that it seems to stand in etiological relation to the disease. Boldt thinks the infiltration may easily be overlooked and he searched for some time before he found it.

**Muscular Dystrophy.** In two cases of progressive muscular dystrophy in brothers, aged fifteen and eleven years, respectively, reported by Wendenburg,<sup>1</sup> the muscles of mastication were hypertrophied, while none of the other muscles of the face were implicated. Hypertrophy of the muscles of mastication is rare in progressive muscular dystrophy, and is mentioned only by a few authors.

**ATROPHY OF BONE IN MUSCULAR DYSTROPHY.** Atrophy of bone occurring in muscular dystrophy has been seen only a few times. I<sup>2</sup> have recently had a second case in which arrest in development and probably also atrophy of bone were very pronounced. Scoliosis was present, as in the cases of Lloyd, Marie, and Crouzon. In my second case the gradual development of the muscular atrophy, the commencement at the age of two years, the progression of the atrophy until the age of sixteen years, the atrophy of a part of one of the muscles (the right triceps), not uncommon in muscular dystrophy, the implication of the bones and muscles of the face, and the absence of shortening of any of the long bones, are in favor of a diagnosis of progressive muscular dystrophy.

In this case the muscular atrophy was intense, the bones of the face also seemed to be affected. A Röntgen ray examination showed that the humerus and scapula on the left side were smaller than those on the right side. The left acromion process and glenoid cavity were unusually small, and the head of the humerus appeared as though it were dislocated forward. The humerus seemed to be deficient in lime salts. The ribs on the left side were larger than those on the right side.

Atrophy of bone and intense muscular contractures are also described by Schlippe.<sup>3</sup>

**MUSCULAR DYSTROPHY ASSOCIATED WITH EPILEPSY.** Onuf<sup>4</sup> has found six cases of epilepsy at the Craig Colony in which symptoms of muscular dystrophy were present. They presented partly muscular atrophies, partly defective muscular action without clearly demonstrable atrophy, with definite distribution of these disturbances manifested as follows:

1. Wing-like standing off of the scapulæ, due apparently chiefly to weakness of the trapezius, possibly also serratus magnus, rhomboideus, and levator anguli scapulæ muscles.

<sup>1</sup> Monatschrift f. Psychiatrie und Neurologie, July, 1905, p. 1.

<sup>2</sup> Review of Neurology and Psychiatry, June, 1905, p. 388.

<sup>3</sup> Deutsche Zeitsch. f. Nervenheilk., December, 1905, vol. xxx., Nos. 1 and 2, p. 128.

<sup>4</sup> Journal of Nervous and Mental Disease, January, 1906, p. 13.



2. Atrophies of the scapular muscles in a strict sense, namely, *infraspinatus* and *supraspinatus*; also occasionally of the deltoids and other muscles of the shoulder joint.

3. Lordosis of the lumbar spine in the erect position, disappearing in sitting position, probably from weakness of the extensors of the hip, causing an inclination of the pelvis forward and compensatory bending backward of the body.

4. *Pes valgus*.

5. Involvement of the facial muscles.

6. Electrical changes manifested most frequently by a reversal of the galvanic formula, particularly in the deltoid muscles.

7. Fibrillary twitching.

All these symptoms were not present in every case.

Onuf cannot positively determine the relation of this symptom-complex to epilepsy, but he suggests that it may have been the result of the epilepsy, nor can he be sure that the cases should be classed under muscular dystrophy. It may be possible, he thinks, that the symptom-complex has some relation to rickets.

**Angina Pectoris.** Numbness of the arm, forearm, or hand has often been observed in cases of angina pectoris, but complete anæsthesia is rare. G. A. Gibson<sup>1</sup> has not been able to find any instance of it beyond one case he himself has observed. His patient, a male, had angina pectoris, and extensive and constant pain, most severe, as a rule over the back, where it extended down as far as the ninth intercostal space. It reached up to the back of the neck, and passed round its side to the left clavicle, which it crossed, and extended down the middle line to the eighth intercostal space, from where it became continuous with the pain at the back by passing round the inferior axillary region. From the shoulder it extended down the outer aspect of the arm and forearm so as to reach the thumb, index and middle fingers. The boundaries were enlarged when paroxysms of pain occurred. A high degree of hyperæsthesia was present over the outer surface of the arm and forearm, but complete anæsthesia was found over the radial portion of the hand, and was bounded along part of its edge by a small zone of analgesia. The inner or ulnar aspect of the arm, forearm, and hand was not affected, *i. e.*, a considerable area belonging to the segmental distribution of the seventh and eighth cervical and first thoracic portions of the cord was intact, while the areas above and below were deeply involved. There was wasting and loss of tone in all the muscles of the shoulder-girdle, arm, forearm, and hand on the left side. Increased electrical excitability was found in the affected muscles. The left eye was more prominent than the right, and the left

<sup>1</sup> Brain, Spring, 1905, p. 52.

pupil was larger than its fellow, showing irritation of the left sympathetic nerve and involvement of the ciliospinal fibres.

The wasting of muscles in angina pectoris has been observed previously, and is attributed by Gibson to powerful afferent impulses, and is like that occurring in arthritic muscular atrophy. The explanation that Gibson gives for his case is as follows: The man was supposed to have arteriosclerosis involving the coronary arteries. The impulses from the heart passed by the cardiac nerves to the cervical ganglia of the sympathetic, then passed in by the gray rami communicantes to the posterior spinal roots, and thence ran upward in the ascending tracts of the cord. In the cortex cerebri the impulses which are produced give rise to sensation, but, in the words of Head, "The sensory and localizing power of the surface of the body is enormously in excess of the viscera, and thus by what might be called a psychical error of judgment, the diffusion area is accepted by consciousness and the pain is referred on to the surface of the body instead of on to the organ actually affected." The cervical sympathetic was evidently involved in Gibson's case. It is difficult, even with this explanation, to understand the anæsthesia in a very limited zone observed by Gibson.

**Myotonia.** A peculiar affection somewhat resembling myotonia, and yet unlike it in many respects, viz., in the absence of the myotonic reaction, in being acquired, etc., is described by v. Bechterew,<sup>1</sup> and is regarded by him as a neurosis, as a disturbance of the voluntary innervation. The patient, a boy whose age is not given, could close his eyes voluntarily, but to open them he was obliged to raise the upper lids with his hands, and repetition of the movement did not remove the difficulty. He usually kept his mouth closed, and if he desired to open it he placed a finger between the upper and lower teeth. After he had opened the mouth, he was obliged to use his hand to close it. The tongue was protruded slightly but with great difficulty. The boy did not speak, but understood what was said to him. He was obliged to use the assistance of one hand to make a fist with the other, and when the fist was made the examiner could not open it, and voluntary opening of it was accomplished very slowly. The movements of the head were slow, but those of the elbows and shoulders, the pronation and supination of the forearms, and the movements of the lower limbs were performed quickly. Involuntary winking was accomplished normally, but if the lids were closed by reflex irritation they could be opened only with the same difficulty as in voluntary movement. The boy took only fluid and soft food, and shoved the latter far into his mouth with his finger before he could swallow it. The case seems to have been a very extraordinary one.

<sup>1</sup> Deutsche Zeitschrift f. Nervenheilkunde, vol. xxix., Nos. 3 and 4, p. 331.





# INDEX.

## A

ABDOMINAL disease and pleurisy, 37  
 muscles, paralysis of, in poliomyelitis, 269  
 Abrams' aortic reflexes, 89  
 Acne, 99  
 Administration control of tuberculosis, 25  
 Adrenalin in asthma, 51  
   in pleural effusion, 41  
 Ærophagia, 71  
 Agraphia, motor aphasia without, 260  
 Ainhum, 101  
 Alcohol and arteriosclerosis, 92  
   in tuberculosis, 32  
 Altitude, effect of, on metabolism, 25  
 Amaurotic family idiocy, 262  
 Anæmia in tuberculosis, 21  
 Anæsthesia, reflexes in, 265  
 Aneurysm, 87  
   aortic, communication of, between pulmonary artery, 86  
   hæmoptysis and, 87  
   non-fatal rupture of, 88  
 Angina pectoris, 78-81, 288  
   aortitis a cause of, 80  
   blood pressure in, 96  
   etiology of, 78  
   treatment of, 80  
   vascular distention a cause of, 79  
 Anthracosis and tuberculosis, 17  
 Antistreptococcus serum for endocarditis, 66  
 Aorta and pulmonary artery, transposition of, 63  
 Aortic endocarditis and pericarditis, 58  
   reflexes, Abrams', 89  
   regurgitation, 62  
   stenosis, 62  
   system, congenital narrowness of, 89  
 Aortitis and angina pectoris, 80  
 Apex-beat, double, 72  
 Aphasia, 260  
   due to lesion of right side of brain, 260  
   motor, without agraphia, 260  
 Arrhythmia, 71, 74  
   and bradycardia, 76  
   and epileptiform seizures, 76  
   due to depression of heart, 76  
 Arsenical neuritis, 276  
 Arterial blood pressure, 94  
   in various conditions, 95  
   significance of, 94  
   study of, 95

Arteriosclerosis, 89-94  
   action of iodine in, 92  
   blood pressure in, 96  
   digitalis in, 93  
   due to drugs, 92  
   etiology of, 89-91  
   experimental production of, 91  
   from tobacco, 92  
   hot baths for, 93  
   influence of alcohol on, 92  
     of diet on, 92  
   metabolism in, 89  
   pulsatile spots in upper limb in, 92  
   thyroid in, 93  
   treatment of, 92  
 Ascarides, pulmonary embolism due to, 86  
 Ascending paralysis, unilateral, 271  
 Aspergillosis, 48  
 Associated movements, paralysis of, a sign of brain tumor, 254  
 Astereognosis, 259  
 Asthma, 49  
   adrenalin for, 51  
   diet in, 49  
   dilatation of, nostrils for, 52  
   mechanical relief of, 52  
   sanatorium treatment of, 51  
 Asystolism, pleural effusion, a course of, 68  
 Atelectasis, pulmonary, 49  
 Atheroma, drug, 92  
   due to tobacco, 92  
   experimental production of, 91  
 Atrophy of bone in muscular dystrophy, 287  
   of trunk in tabes, 267  
 Auricular pulse, 71  
   tracing, 71  
 Auriculoventricular bundle of His, 73-74  
 Auscultation of foetal heart sounds, 189  
   Reichmann's rod, 55  
   transmanual, 57  
 Auscultatory percussion apparatus, 56

## B

BACILLARY pleurisy, 38  
 Bacilloscopic test for pleurisy, 39  
 Bacillus *aërogenes capsulatus* in puerperal infection, 230-234  
 Bacteriology of normal puerperium, 226  
 Bandaging extremities in cardiorenal disease, 85  
 Baths, hot, for arteriosclerosis, 93  
 Birth palsy, brachial, 241-246



Birth, facial palsy at, 280  
 Blastomycosis, 103  
 Blindness, word, 260  
 Blood agar plates in obstetrical work, 228  
   chlorides in, in eclampsia, 163  
   freezing point of, in eclampsia, 163  
   pressure, 94  
     in angina pectoris, 96  
     in arteriosclerosis, 96  
     in polycythæmia hypertonica, 95  
     in various states, 95  
     significance of, 94  
     study of, 95  
     treatment of, high, 96  
 Bloodvessels, 85  
 Bone, atrophy of, in muscular dystrophy, 287  
 Bossi's method of dilating cervix, 193, 196, 199  
 Brachial birth palsy, 241-246  
 Bradycardia and arrhythmia, 76  
   and epileptiform seizures, 76  
   due to depression of heart, 76  
   syncopal, 77  
   treatment of, 77  
 Brain, diseases of, 251  
   gumma of, 251  
   hernia of, 252  
   right-sided lesion of, a cause of aphasia, 260  
   tumor, 251-257  
     and hydrocephalus, 255  
     conclusions from necropsies, 251  
     in motor area, 252  
     menstruation in, 253  
     of lateral ventricle, 253  
     paralysis of associated movements  
       a sign of, 254  
     reflexes in, 252  
     without lesions, symptoms of, 253  
 Brauer's operation, 59  
 Breussubchorial hematoma, histology of, 175  
 Bronchi, 46  
 Bronchial colic due to calculus, 46  
   bronchitis, capillary, 46  
     treatment of, 46  
   bronchopneumonia, mustard bath for, 47  
   glands, palpation of, 22  
 Bronchus, foreign body in, 46  
 Brown-Sequard paralysis, 273  
 Bulbar palsy, 263

## C

CÆSAREAN section, 206-213  
   for placenta prævia, 219  
   on the dying, 207  
   vaginal, 197  
 Calcium chloride for hæmoptysis, 30  
 Calculus, bronchial colic due to, 46  
 Cancer. *See* Carcinoma.  
 Carcinoma and tuberculosis, 24  
   of rectum in pregnancy, 220  
 Cardiolysis, 59

Cardiorenal disease, bandaging extremities for, 85  
 Caries of vertebra, 272  
 Catarrh and tuberculosis, 23  
 Cerebellar paralysis, 257  
 Cerebellopontile angle, tumor of, 257  
 Cerebral localization, 258  
 Cervix, dilatation of, 193-199  
   Bossi's method of, 193, 196, 199  
   with body of fœtus, 195  
   with Duhrssen's method, 196  
   with elastic bags, 195  
   vaginal Cæsarean section for, 197  
 Chancre, extirpation of, 133  
 Chemistry of toxæmia of pregnancy, 151  
 Chest, physical examination of, 55  
 Chlorides in blood and urine in eclampsia, 163  
 Cholecystitis in puerperium, 221  
 Cholelithiasis in puerperium, 222  
 Choline in epilepsy, 281  
 Choreia, 284  
 Chorioepithelioma following hydatidiform mole, 176  
 Circulation, reversal of, 85  
 Clavicle, fracture of, in head presentations, 246  
 Coccidioidal granuloma, 103  
 Colloidal silver in puerperal infection, 240  
 Congenital heart disease, 63  
 Cornea, obstetric injuries of, 246  
 Cough in tuberculosis, 27  
 Cranial nerves, neuritis of, 278  
 Crises, tabetic, 268  
 Cytodiagnosis, 38  
 Cytoscopic test for pleurisy, 39

## D

DECAPITATION, extraction of head after, 216  
 Dermatology, 99  
   malingering in, 113  
 Diaphragm, action of, in pneumothorax and pleural effusion, 43  
 Diet and asthma, 49  
   and arteriosclerosis, 92  
   in tuberculosis, 31  
   salt-free, in epilepsy, 283  
 Dietetic treatment of pernicious vomiting, 169  
 Digalen in heart disease, 81  
 Digitalis in arteriosclerosis, 93  
   in heart disease, 81  
 Diphtheria, hemiplegia following, 262  
   reflexes in, 265  
 Diseases of brain, 251  
   of nervous system, 251  
   of peripheral nerves, 275  
   of spinal cord, 265  
 Disseminated sclerosis, 274  
 Drug absorption by the skin, 104  
   atheroma, 92  
 Duhrssen's method of dilating cervix, 196  
 Dwarfs from an obstetrical view, 204  
 Dyspnœa from enlarged glands, 20

**E**

- ECHINOCOCCUS of heart, 68  
 Eclampsia, 149, 159, 168  
   chlorides in, 163  
   gangrene following, 164  
   morphine for, 167  
   placental origin of, 161  
   the poisons in, 160  
   theories on, 159  
   treatment of, 165  
 Ectopic pregnancy. *See* Tubal pregnancy.  
 Eczema deaths, 105  
   infantile, 107  
 Elastic bags to dilate cervix, 195  
 Electrical irritability in facial palsy, 280  
 Embolism due to ascarides, 86  
   due to hydatids, 86  
 Empyema, 41  
   disappearance of lung after, 42  
   double, 42  
   hemorrhage in, 43  
   pneumococcus, 43  
   pulsating, 41  
 Emphysema, 53  
   mechanical treatment of, 53  
   respiratory jacket for, 53  
 Endocarditis, antistreptococcus serum for, 66  
   aortic and pericarditis, 58  
   gonorrhœal, 66  
   pyrexia in chronic, 66  
 Epidemic meningitis, 263  
 Epidermolysis bullosa, 108  
 Epilepsy, 281  
   and muscular dystrophy, 287  
   choline in, 281  
   Jacksonian, 282  
   otitic, 282  
   salt-free diet in, 283  
   treatment of, 283  
 Epileptiform seizures associated with bradycardia and arrhythmia, 76  
 Ergot in hæmoptysis, 29  
 Erysipelas, 11  
 Exercise in tuberculosis, 28  
 Expectoration in tuberculosis, 27  
   mechanism of, 55  
 Extirpation of chancre, 133  
 Extraction of head after decapitation, 216  
 Eye, obstetric injuries to, 247  
   paralysis of associated movements of, a sign of brain tumor, 254

**F**

- FACIAL hemiatrophy, 280  
   palsy, 279  
     at birth, 280  
     electrical irritability in, 280  
     in facial hemiatrophy, 280  
     in tetanus, 280  
 Family periodic paralysis, 285  
 Flatulent distention, heart symptoms due to, 71  
 Flies a carrier of tubercle bacilli, 26

- Fœtal death from withdrawal of liquor amnii, 186  
   heart murmurs, 62  
     sounds, auscultation of, 189  
 Fœtus, dilatation of cervix with, 195  
   hydrocephalic, delivery of, by tapping, 214  
 Foot, tabetic, 267  
 Formic acid in heart disease, 82  
 Fracture of clavicle in head presentations, 246  
 Functional disorders of heart, 68, 69

**G**

- GALVAGNI'S method in pleurisy, 36  
 Gangrene following eclampsia, 168  
 Gasserian ganglion, tumor of, 257  
 Gastric juice and tuberculosis, 21  
   ulcer. *See* Stomach.  
 Gonorrhœal endocarditis, 66, 238  
   neuritis, 276  
   septicæmia, 66  
 Grocco's triangle, 37  
 Gumma of brain, 251  
 Gynecological practice, transfusion in, 222

**H**

- HÆMOPTYSIS, 28, 87  
   calcium chloride for, 30  
   cause of, 28  
   due to pneumococcus, 28  
   ergot for, 29  
   from aneurysms, 87  
   internal treatment of, 28  
   postural treatment of, 31  
   treatment of, 28-31  
   vasodilatation for, 30  
 Head after decapitation, extraction of, 216  
   presentation, fracture of clavicle in, 246  
 Headache, 257  
 Heart, 60  
   arrhythmia of, 74  
   block, 73-78  
   debility, constitutional, 64  
   dilatation of, 66  
     acute, 67  
     auricular, 66  
     mechanism of, 67  
     pressure of, on nerves, 67  
   disease, 81-85  
     bandaging extremities for, 85  
     congenital, 63  
     digalen for, 81  
     digitalis for, 81  
     formic acid for, 82  
     Nauheim treatment of, 83  
     opium in, 83  
     respiratory treatment of, 85  
     strophanthin-G for, 81  
     strophanthus for, 81  
     strychnine in, 83  
     treatment of, 81-85



Heart, displacement of, in pleurisy, 37  
 double apex-beat of, 72  
 effect of muscular work on, 68  
 estimations, 70  
 fatty, 64  
 functional disorders of, 68, 69  
 hydatids of, 68  
 in pericardial effusions, 58  
 in pneumothorax, 44  
 independent action of two sides of, 77  
 murmurs, 62  
   fetal, 62  
   neurotic, 70  
   orthopercussion method for, 60  
   percussion of, 60  
   sounds, fetal, auscultation of, 189  
     influence of posture in, 61  
     reduplicated, 72  
   symptoms due to flatulency, 71  
   variations in size of pulse and, 70  
 Hebotomy, 199, 202  
 Hematoma, histology of Breus subchorial, 175  
 Hemiplegia, 261  
   causes of, 261  
   following diphtheria, 261  
   micrographia in, 262  
   spinal, 273  
 Hereditary syphilis, 135  
 Hernia, congenital, of umbilical cord, 248  
   of brain, 252  
 Herpes in meningitis, 264  
   zoster, 112  
 His' bundle in Stokes-Adams disease, 73, 74  
 Histology of Breus subchorial hematoma, 175  
 Hydatid cyst in heart, 68  
   in pulmonary artery, 86  
 Hydatidiform mole, chorioepithelioma following, 176  
 Hydrocephalic foetus, delivery of, by spinal tapping, 214  
 Hydrocephalus, internal, and brain tumor, 255  
 Hyperemesis gravidarum, 168  
 Hysteria, 283

## I

IDIOCY, amaurotic family, 262  
 Infant, newborn, 241  
 Infantile eczema, 107  
 Infection, puerperal, 226  
   colloidal silver for, 240  
   due to bacillus *aërogenes capsulatus* 230-234  
   gonorrhœal, 238  
   pneumococcic, 238  
   streptococcic, 238  
   varied character of, 234  
   turpentine for, 240  
   treatment of, 239  
 Infectious diseases, myocarditis after, 65  
 Injection method of treating syphilis, 143  
 Inoscopy, 38  
 Intermittent lameness, 286  
 Intestinal origin of tuberculosis, 27

Intrapleural lipoma, 45  
 Intratracheal injections, 47  
   bactericidal action of, 48  
   through the nose, 48  
 Iodine, action of, in arteriosclerosis, 92

## J

JACKSONIAN epilepsy, 282  
 Jugular vein regurgitation, 71

## K

KRONIG'S sign, 22

## L

LAMENESS, intermittent, 286  
 Lateral ventricle, tumor of, 253  
 Lipoma, intrapleural, 45  
 Liquor amnii, 186  
   fetal death from withdrawal of, 186  
   infection of, 188  
   placental changes from withdrawal of, 186  
 Liver, acute yellow atrophy of, 149, 237  
 Localization, cerebral, 258  
   of muscle groups, 259  
   of sensation, 258  
   spinal, 274  
 Longevity and syphilis, 138  
 Lumbar puncture in diagnosis of spinal tumors, 272  
 Lung, apex of, in tuberculosis, 22  
   disappearance of, after empyema, 42  
   effect of paracentesis on, 36  
 Lungs, 48  
   congestion of, bleeding for, 49  
 Lymphatic system and tuberculosis, 19  
 Lymphocyte and tubercle bacillus, 20

## M

MALINGERING in dermatology, 113  
 Mammary gland in tuberculosis, 21  
 Maternal syphilis, 178  
 Mediastino-pericarditis, 59  
 Meningitis, 263  
   epidemic form, 263  
   herpes in, 264  
   pilocarpine for, 264  
   treatment of, 264  
 Menstruation, effect of brain tumor on, 253  
 Mercury, 143  
 Mesenteric gland curetting to prevent tuberculosis, 27  
 Metabolism, effect of altitude on, 25  
   in tuberculosis, 24  
 Micrographia in hemiplegia, 262  
 Miliary tuberculosis, 19  
 Miners' phthisis, 19  
 Mitral stenosis and tuberculosis, 24  
   reduplication of second sound in, 62

Monstriality, recurrent, 216  
 Morphine in treatment of eclampsia, 168  
 Mortality in tuberculosis, 25  
 Motor aphasia without agraphia, 260  
   area, tumor of, 252  
 Multiple sclerosis, 274  
 Murmurs, foetal, 62  
   heart, 62  
   musical, 62  
 Muscle groups, localization of, 259  
 Muscles, abdominal paralysis of, in poliomyelitis, 269  
 Muscular dystrophy, 287  
   and epilepsy, 287  
   atrophy of bone in, 287  
   effect of, on the heart, 68  
 Mustard bath for bronchopneumonia, 47  
 Myasthenia gravis, 286  
 Myelitis, 268  
 Myocarditis, 65  
   after infectious diseases, 65  
   diffuse, 65  
 Myotonia, 289

## N

NAUHEIM baths for heart disease, 83  
 Nerves, cranial, neuritis of, 278  
   peripheral, diseases of, 275  
 Nervous reticulum in villi of placenta, 176  
   system, diseases of, 251  
 Neuritis, 275  
   arsenical, 276  
   gonorrhœal, 276  
   of cranial nerves, 278  
   optic, in syringomyelia, 272  
 Neurofibroma, 115  
 Neurotic heart, 70  
 Newborn infant, 241  
 Normal salt solution, 222, 225  
 Nose, intratracheal injections through, 48

## O

OBSTETRIC injuries of cornea, 247  
   surgery, 193  
   work, blood-agar plates in, 228  
 Obstetrical practice, transfusion in, 222, 225  
 Obstetrics, 149  
   dilatation of cervix in, 193  
   dwarfs in, 204  
 Ocular injuries, obstetric, 247  
   syphilis, 137  
 Oöphorectomy, bilateral, 213  
 Open-air treatment of tuberculosis, 28  
 Opium in heart disease, 83  
 Opsonic index, 34  
   influence of yeast on, 35  
 Optic neuritis in syringomyelia, 272  
 Orthopercussion of heart, 60  
 Osteomalacia, puerperal, 213  
 Otitic epilepsy, 282  
 Ovary and placenta, internal secretion of, 171

## P

PALPATION, ulnar, 57  
 Pal's sphygmoscope, 96  
 Palsy, brachial birth, 241, 246  
   bulbar, 263  
   facial, 279  
     at birth, 280  
     electrical irritability in, 280  
     in facial hemiatrophy, 280  
     in tetanus, 280  
   peroneal, 276  
 Paracentesis, effect of, on lung, 36  
   pericardium, 58  
 Paralysis agitans, 284  
   scopolamine in, 284  
   Brown-Séquard, 273  
   cerebellar, 257  
   family periodic, 285  
   of abdominal muscles in poliomyelitis, 269  
   of associated movements, a sign of brain tumor, 254  
   of pregnancy, 276  
   of puerperium, 276  
   unilateral ascending, 271  
 Patellar reflexes, return of, in tabes, 265  
 Pemphigus, 117  
   in the mouth, 119  
 Percussion, 56  
   new method of, 56  
   of heart, 60  
   transmitted, 57  
 Pericardial effusion, 58  
   heart in, 58  
   mobility of, 58  
   paracentesis in, 58  
 Pericarditis, adhesive, 59  
   and aortic endocarditis, 58  
   pneumococcal, 58  
 Pericardium, 58  
 Periuterine thrombophlebitis, 237  
 Pernicious vomiting of pregnancy, 149, 168  
   diet in, 169  
 Peroneal palsy, 276  
 Phonoscope, 57  
 Phthisis, Rand miners', 19. *See* Tuberculosis  
 Pilocarpine in meningitis, 264  
 Placenta and ovary, internal secretion of, 171  
   nervous reticulum in villi of, 176  
   prævia, 217, 220  
     Cæsarean section for, 219  
   structural anomalies of, in undeveloped uteri, 174  
 Placental changes from withdrawal of liquor amnii, 186  
   origin of eclampsia, 163  
 Pleura, 36  
 Pleural effusion a cause of asystolism, 68  
   action of diaphragm in, 43  
   adrenalin for, 41  
   and pneumothorax, 43  
   treatment of, 40  
 Pleurisy, 36  
   and abdominal disease, 37



- Pleurisy and rheumatism, 38  
 bacillary, 36, 38  
 bacilloscopic test for, 39  
 cytodagnosis in, 38  
 cytoscopic test for, 39  
 diagnosis of, 36  
   bimanual compression in, 36  
   Galvagni's method in, 36  
   Grocco's triangle in, 37  
 displacement of heart in, 37  
 inoscopy in, 38  
 tuberculous, 38  
 types of, 39
- Pneumococcus a cause of hæmoptysis, 28  
 empyema, 43  
 pericarditis, 58  
 puerperal infection, 238
- Pneumonia acquired in utero, 189
- Pneumonomycosis aspergillina, 48
- Pneumothorax, 43  
 action of diaphragm in, 43  
 heart in, 44  
 recurrent nerve paralysis in, 44  
 spontaneous, 44  
 treatment of, 45
- Poliomyelitis, 268  
 chronic anterior, 270  
   paralysis of abdominal muscles in, 269
- Polycythæmia hypertonica, blood pressure in, 95
- Postural treatment of hæmoptysis, 31
- Posture, influence of, on heart sounds, 61
- Pregnancy, 149  
 cancer of rectum in, 220  
 pains, 190-193  
 paralysis in, 276  
 pernicious vomiting in, 149, 168  
 purpura hemorrhagica in, 183  
 pyelonephritis of, 179-183  
 toxæmia of, 149-159  
   chemistry of, 151  
   clinical signs of, 153-159  
   theories of, 153  
 tubal, 172  
 tuberculosis in, 184  
 ulcer of stomach in, 177
- Premenstrual pyrexia in tuberculosis, 23
- Prevention of tuberculosis, 25
- Prognosis of tuberculosis, 23
- Pubiotomy, 199-202
- Puerperal infection, 225, 226  
   colloidal silver for, 240  
   due to bacillus *aërogenes capsulatus*, 230-234  
   gonorrhœal, 238  
   pneumococcic, 238  
   streptococcic, 238  
   treatment of, 239  
   turpentine for, 240  
   varied character of, 234  
 osteomalacia, 213  
 period, 225
- Puerperium, cholecystitis in, 221  
 influence of vaginal douche on morbidity in, 239  
 normal, germ content of uterus and vagina in, 226
- Puerperium, normal, streptococci in, 229  
 paralysis of, 276
- Pulmonary artery and aorta, transposition of, 63  
   communicating with aortic aneurysm, 86  
   hydatid cyst of, 86  
   thrombosis of, 86  
 atelectasis in adults, 49  
 congestion, bleeding for, 49  
 hemorrhage. *See* Hæmoptysis.  
 insufficiency, 54  
 tuberculosis. *See* Tuberculosis.  
 ventilation, 54
- Pulse, auricular, 71  
 variation in size of, 70
- Purpura hemorrhagica in pregnancy, 183
- Pyelonephritis of pregnancy, 179-183
- Pyonephrosis, 237
- ## R
- RAND miners' phthisis, 19
- Rectum, carcinoma of, in pregnancy, 220
- Recurrent nerve paralysis in pneumothorax, 44
- Reduplicated heart sounds, 72
- Reflexes, Abrams' aortic, 89  
 in anæsthesia, 265  
 in diphtheria, 265  
 return of, in tabes, 265
- Regurgitation in jugular vein, 71
- Reichmann's rod auscultation, 55
- Respiration, 53  
 Cheyne-Stokes, 53  
   mechanism of, 53  
   periodic, 54
- Respiratory jacket for emphysema, 53  
 treatment of heart disease, 85
- Rest in tuberculosis, 28
- Retroversion of gravid uterus, 171
- Rheumatism and pleurisy, 38
- Rhinophyma, 119
- Ringworm of the scalp, 123  
 x-ray for, 126
- Rupture of aneurysm, non-fatal, 88  
 of symphysis pubis, 202  
 of uterus, 208-313
- ## S
- SALINE solution, 222-225
- Salt-free diet in epilepsy, 283
- Sanatorium treatment of asthma, 51
- Santonine for crises in tabes, 268
- Scalp, ringworm of, 123  
 x-ray for, 126
- Sciatica, 275
- Sclerosis, disseminated, 274
- Scopolamine in paralysis agitans, 284
- Sea water subcutaneously for tuberculosis, 33
- Sensation, disturbance of, in tabes, 266  
 localization of, 258  
 of pressure, 266

- Sensory tracts in cord, 274  
 Septicæmia, gonorrhœal, 66  
 Shock, strychnine in, 83  
 Silicosis, 19  
 Silver, colloidal, for puerperal infection, 240  
 Skin diseases of, 99  
     drug absorption from, 104  
     tuberculosis of, 129  
 Sphygmocardiograph, 70  
 Sphygmograph, Pal's, 96  
 Spinal cord, diseases of, 265  
     relation of segments of, to vertebræ, 274  
     sensory tracts in, 274  
     hemiplegia, 273  
     localization, 274  
     tapping, delivery of hydrocephalic fœtus by, 214  
     lumbar puncture in diagnosis of, 272  
 Spirochæta pallida, 140  
 Sputum of tuberculosis, examination of, 26  
     flies a carrier of, 26  
     infection by, 26  
 Stethoscope, rigid, 55  
 Stokes-Adams disease, 73-78  
     anatomy of, 73  
     clinical pathology of, 73  
     physiology of, 73  
 Stomach, ulcer of, in pregnancy, 177  
 Streptococci in normal puerperium, 229  
 Streptococcus, puerperal infection, 238  
 Strophanthin-G in heart disease, 81  
 Strophanthus in heart disease, 81  
 Strychnine in shock, 83  
 Surgery, obstetrical, 193  
 Symphyseotomy, 199-200  
 Symphysis pubis, rupture of, 202  
 Syphilis, 131, 177  
     and longevity, 138  
     diagnosis of, 131  
     hereditary, 135  
     injection method of treating, 143-148  
     maternal, 177  
     ocular, 137  
     spirochæta of, 140  
 Syringomyelia, 272  
     optic neuritis in, 272
- T**
- TABES, 265  
     atrophy of trunk in, 267  
     crises in, 268  
         santonine for, 268  
     disturbances of sensation in, 266  
     duration of life in, 267  
     return of patellar reflexes in, 265  
     tendo Achillis in, 266  
 Tabetie foot, 267  
 Tachycardia in tuberculosis, 23  
     puerile paroxysmal, 78  
 Tendo Achillis in tabes, 266  
 Tent cottage for tuberculosis, 27  
 Tetanus, facial palsy in, 280  
 Thoracic duct in miliary tuberculosis, 19  
 Thrombophlebitis, periuterine, 237  
 Thrombosis of pulmonary artery, 86  
 Thyroid in arteriosclerosis, 93  
 Tic douloureux, 279  
 Tobacco a cause of atheroma, 92  
 Toxæmia of pregnancy, 149, 159, 168  
     chemistry of, 151  
     clinical signs of, 153, 159  
     theories of, 153  
 Transfusion, saline, 222, 225  
 Treatment of acne, 99  
     of ainhum, 102  
     of angina pectoris, 80  
     of arteriosclerosis, 92  
     of asthma, 51  
     of bradycardia, 77  
     of bronchitis, capillary, 46  
     of bronchopneumonia, 46  
     of cough, in tuberculosis, 27  
     of eclampsia, 165-168  
     of eczema, infantile, 107  
     of emphysema, 53  
     of epilepsy, 283  
     of erysipelas, 110  
     of expectoration in tuberculosis, 27  
     of hæmoptysis, 28  
     of heart disease, 81-85  
     of herpes zoster, 112  
     of high tension, 96  
     of hyperemesis gravidarum, 168  
     of meningitis, 264  
     of placenta prævia, 217-220  
     of pleural effusion, 40  
     of pneumothorax, 45  
     of puerperal infection, 239  
     of pyelonephritis of pregnancy, 182  
     of retroversion of gravid uterus, 171  
     of rhinophyma, 122  
     of ringworm of scalp, 123-128  
     of rupture of uterus, 203-213  
     of shock, 83  
     of syphilis, 143-148  
     of tuberculosis, 27  
 Trichorrhæxis nodosa, 128  
 Tubal pregnancy, 172  
 Tubercle bacillus and gastric juice, 21  
     and lymphocytes, 20  
 Tuberculosis, miliary, 19  
     of lymphatic system, 19  
     of skin, 129  
     of thoracic duct, 19  
     pulmonary, 17  
         administrative control of, 25  
         alcohol in, 32  
         anæmia in, 21  
         and anthracosis, 17  
         and carcinoma, 24  
         and catarrh, 23  
         and mitral stenosis, 24  
         apex of lung in, 22  
         diagnosis of, 20, 21  
         influence of posture in, 22  
         diet in, 31  
         early signs of, 20  
         immunity in, 35  
         in pregnancy, 184  
         infection in, 27-35  
         infectiveness of sputum in, 26



Tuberculosis, pulmonary, intestinal infection in, 27  
 intratracheal injections for, 47  
 mammary gland in, 20  
 metabolism in, 24  
 mesenteric gland curéting in, 27  
 mortality of, 25  
 open air for, 28  
 opsonic index in, 34  
 premenstrual pyrexia in, 23  
 prevention of, 25  
 prognosis in, 23  
 rest in, 28  
 sea water for, 33  
 tachycardia in, 23  
 tent cottage for, 27  
 treatment of, 27  
 vaccine treatment of, 34  
 x-ray in diagnosis of, 21  
 yeast in, 35

Tuberculous pleurisy, 38

Tumor, brain, 251-257  
 conclusions from necropsies, 251  
 menstruation and, 253  
 of cerebellopontile angle, 257  
 of Gasserian ganglion, 257  
 of lateral ventricle, 253  
 of motor area, 252  
 paralysis of associated movements in, 254  
 reflexes in, 252  
 without lesions, symptoms, 253  
 spinal, lumbar puncture in diagnosis of, 272

Turpentine for puerperal infection, 240

## U

ULCER of stomach in pregnancy, 177

Ulnar palpation, 57

Umbilical cord, congenital hernia of, 248

Urine, chlorides in, in eclampsia, 163  
 freezing point of, in eclampsia, 163

Uteri, undeveloped, structural changes in placenta of, 174

Uterus, bacteriology of, in normal puerperium, 226

Uterus, retroversion of gravid, 171  
 rupture of, 208-213

## V

VACCINE treatment of tuberculosis, 324

Vagus inhibition, factitious, 70

Vagina, bacteriology of, in normal puerperium, 226

Vaginal Cæsarean section, 197  
 douche, influence of, on morbidity in puerperium, 239

Vascular distention and angina pectoris, 79  
 fibrosis, 97  
 spasm, 97

Vasodilatation for hæmoptysis, 31

Vena cava, superior, obliteration of, 85

Ventricle, lateral, tumor of, 253

Vertebræ, caries of, 272  
 relation of segments of cord to, 274

Vomiting, pernicious, of pregnancy, 194, 168  
 diet in, 169

## W

WILLIAMS' sign, 22

Word-blindness, 260

## X

X-RAY for ringworm of scalp, 126  
 diagnosis of tuberculosis, 21

## Y

YEAST, influence of, on opsonic index in tuberculosis, 35

Yellow atrophy of liver, 149, 237

## Z

ZOSTER, 112







# Announcement



WHEN we originated *sterilized unsweetened condensed milk* our product was named "EVAPORATED CREAM"---a term descriptive of its creamy consistency and color, and adopted for the purpose of distinguishing it from the older sweetened preparation (a mixture of milk and sugar cane) which had become known as "Condensed Milk."

¶ In food substance our product is richer than "dairy cream," and may be used in place of ordinary cream; furthermore, since it is a FORM OF CREAM obtained by a process of evaporation, the name "Evaporated Cream," always accompanied by a correct description of the article on labels and in advertising, seemed to us quite appropriate.

¶ The National Pure Food Law, which becomes effective January 1, 1907, carries a clause preventing the sale of any article, EXCEPTING MIXTURES AND COMPOUNDS, under a distinctive name. As our product is neither a compound nor a mixture, such as "Condensed Milk," "Malted Milk," "Ice Cream," etc., our distinctive name, "Evaporated Cream," is ruled out.

¶ Appreciating the benefit which will accrue to the public from the Pure Food Law by giving protection against fraudulent products, we cheerfully accept the above ruling and shall in the future sell our product under the simple name of "EVAPORATED MILK." The product will remain unchanged, and will continue to be a safe, uniform and satisfactory substitute food for infants.

HELVETIA MILK CONDENSING CO.,

Highland, Ill.

Manufacturers of

"Highland Evaporated Milk"

"Pet Evaporated Milk"



The ONLY work covering the New United States Pharmacopœia.

Used by the U. S. Government.

THE  
**National Standard Dispensatory**

By HARE, CASPARI and RUSBY

**THE NATIONAL STANDARD DISPENSATORY**, containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines, including those recognized in the Pharmacopœias of the United States, Great Britain and Germany, with numerous references to other Foreign Pharmacopœias. In accordance with the new U. S. Pharmacopœia, 1905, and by authority of the Convention. By **Hobart Amory Hare, M.D.**, Professor of Therapeutics in the Jefferson Medical College, Philadelphia, Member of the Committee of Revision of the U. S. P.; **Charles Caspari, Jr., Ph.G., Phar.D.**, Professor of Pharmacy in the Maryland College of Pharmacy, Baltimore, Member of the Committee of Revision of the U. S. P.; and **Henry H. Rusby, M.D.**, Professor of Botany and Materia Medica in the New York College of Pharmacy, Member of the Committee of Revision of the U. S. P. With valuable assistance from **Edward Kremers, Ph.D.**, Professor of Chemistry, University of Wisconsin; **Daniel Base, Ph.D.**, Professor of Inorganic and Analytical Chemistry, University of Maryland, and **Joseph F. Geisler, Ph.C.**, Chemist, New York State Department of Agriculture. Imperial octavo, 1860 pages, 478 engravings.

Cloth, \$7.25, net; leather, \$8.00, net. Thumb-index, 50 cents extra.

**TO** Practitioners of Medicine and Pharmacy this new work of the highest authority is of indispensable value. By authorization of the Convention it contains every article in the new Pharmacopœia together with all information necessary to an understanding of its brief official statements. It also covers the essentials of the latest foreign Pharmacopœias, and the very important domain of unofficial drugs of recognized value. Thus it furnishes a complete repertory of the present-day Materia Medica, Pharmacy and Therapeutics.

Its three chief authors are pre-eminent in their respective fields. **PROFESSOR RUSBY** has treated the department of Pharmacognosy, including both minor and major drugs of the entire globe, a service never before rendered. **PROFESSOR CASPARI** deals with Pharmacy giving full information regarding methods, products, apparatus and tests; and **DR. HARE** has written the sections on Medical Actions and uses, giving direct and compact presentation of modern Therapeutics. An **Appendix** contains tables, formulas, tests, etc., for practical use. The **General Index** gives references fully covering the text, and the **Therapeutic Index** contains, under each Disease, references to all medicines of value in its treatment.

The **National Standard Dispensatory** is well balanced, equally strong on Pharmacy and Therapeutics, indispensable and invaluable to both doctor and druggist. The Pharmacopœia uses only the Metric System in its official formulas. The **National Standard Dispensatory** gives both the Metric and the ordinary equivalents.

The radical changes in the new Pharmacopœia, many of them in poisonous drugs, make it imperative that pharmacist and physician work by the same standard. The new Pharmacopœia, covered by the **National Standard Dispensatory alone**, is the only authority recognized in court. Against possible damage suits, deplorable accidents or unsuccessful treatment, the purchase of this Dispensatory is a wise precaution.

Sent postpaid on receipt of price by the Publishers, to any address in the United States or its Possessions, Canada, Mexico and Cuba. For sale by all Booksellers and Wholesale Druggists

PHILADELPHIA:  
706-8-10 Sansom Street.

**Lea Brothers & Co.**

NEW YORK:  
111 Fifth Avenue